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# Pharmaceutical Review.

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# Pharmaceutical Review.

VOLUME 18. JANUARY, 1900. NUMBER 1.

## Announcement.

With the present number, the Pharmaceutical Review enters upon its eighteenth year. When the writer took editorial charge of the journal four years ago, he was told that the greatest difficulty he would encounter was that of securing original matter. Before the end of the second year, however, more original matter was received than could be accommodated. In order not to make the Review too technical and to keep it true to its name, the more technical scientific articles were taken out of the Review and published by themselves as the Pharmaceutical Archives, the two publications supplementing each other.

While it is true that the size of either journal is not such as to render them bulky by any means, the amount of matter published is certainly very creditable if its character is taken into consideration. The Review and Archives have published nine hundred and sixty-four pages of matter during the past year. This amount of scientific matter is possibly unequaled by any pharmaceutical journal in this country. If the price of the two journals is compared with that of other scientific publications of this country, it will, no doubt, be found lower than that of any other journal for the amount of matter published.

The Review is not a money-making enterprise. As one of the foremost journals of American pharmaceutical science it hopes to receive that support which it ought to have. To those who have made the journal possible in the past, whether they have contributed

to its columns or to its financial support, which is equally important, we desire to extend our most hearty thanks. Inasmuch as the Review is not the organ of any faction, but represents American scientific pharmacy at large, may we not hope that its support in the future will be even greater than in the past? We desire to thank our readers and patrons for their liberal support during the past year, and wish them all a happy and prosperous new year.

## Editorial.

About two years ago,* the writer gave a brief account of the origin and growth of the Lloyd Library. The importance of this collection of pharmaceutical and botanical works is being so fully recognized, not only in this country but by European representatives of pharmaceutical and botanical science as well, that it requires no further introduction. Flueckiger, who was so well versed in the history of drugs, some years ago was astonished at the number of rare works which the Library even then contained. He considered it a wrong that such a valuable collection should remain in this country and pleaded that it be deposited with some German university where its treasures could be consulted by the scientific students flocking to these centers of learning from all parts of the world.

Some of the rarest treasures of this Library are now to be made accessible to students in general and the German historian may soon be able to peruse the Materia Medica by Barton, or Peter Smith's Dispensatory in his own country if he but chooses. On another page (p. 53) will be found the announcement by Messrs. J. U. and C. G. Lloyd with reference to reprints of some of the rarest representatives of their collection in the form of Bulletins of the Lloyd Library. American students will welcome the publication of these bulletins as heartily as their European confrères. The Lloyd Library has always been exceedingly liberal in placing its books at the disposal of those who desired to use them. With the issue of these bulletins, however, it will enter upon a new era of usefulness. That these bulletins will be greatly appreciated, there can be no doubt.

In the Supplement of this number (p. 51) will be found a brief account of some recent results accomplished in education by correspondence

* This journal, vol. 16, p. 85.

in the various branches of engineering and related pursuits. Although the institute referred to is of more recent date than similar ventures in pharmacy, it seems to have outstripped anything ever attempted by pharmaceutical institutes, courses, or home studies, as they have been called. Not only have the latter been outnumbered, as is to be expected, but if one may judge from reports, the instruction is more thorough and imparted in a more practical manner. That extension courses in the departments of letters have been offered in recent years by a number of colleges and universities, that short summer courses are being demanded everywhere, and that instruction by correspondence even in the advanced courses in letters have been offered more or less extensively in recent years, is generally known. Higher education, though constantly advancing, is evidently to be supplemented by popular education along all lines. The American people are evidently no longer satisfied to send a few of their sons and daughters to colleges and universities, but they want the schools, high and low, to come to them as well. Whether our colleges and universities can best satisfy their demand or whether special institutes, either independent or under the direction of higher educational institutions can best satisfy the people remains to be seen.

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**Retrospect: Commercial.** The unrest so characteristic of pharmacy at present is not local. but quite general throughout the civilized world. Whether it be the company pharmacies as in England, the ever present conflict between first- and second-class pharmacists as in Germany, or the "syndicat" as in France, the question of how to make a living or to secure fair returns on an investment is predominant in the minds of the pharmacists.

That the United States make no exception, we know only too well.

With a determination and will, characteristic of a people in the earlier stages of development as a nation, the American druggist has taken hold of the commercial problems confronting him. Organization has been his watch-word for the past year and with much desperation and some hope his captains are organizing and organizing the druggists of every city and hamlet. Attempts at the complete organization of all of the druggists of the United States have been made before and have failed. What the outcome of the present movement will be, it is too early to state. It would seem, however, that never before has so much energy been spent in similar attempts.

The enthusiasm of many officers and delegates at the meetings at St. Louis and Cincinnati seems to have been unbounded. The provocation to unite, to drop minor matters and to advance with a singleness of purpose certainly has never been greater. The present movement is, therefore, one of extreme moment and deserves the careful consideration of all thinking persons connected with pharmacy. The present seems to be a time for action rather than for theorizing. This seems to have been fully realized by most persons critically inclined. and where they have found nothing to praise, they have preferred to remain silent rather than to make criticisms that might be construed as unfriendly.

The present movement, however, cannot permanently feed on enthusiasm. Those most deeply concerned in it certainly realize this fact. Indeed, they have invited suggestions, even if these suggestions were to be diametrically opposed to the present policy pursued by their new organization. The time may, therefore, be opportune for a calm review of the subject: 1) the organization of the retail druggists of the United States; 2) the objects of their organization and the policy pursued; 3) the possible results.

**Organization.** That in union there is strength has become so apparent to the members of the National Association of Retail Druggists within the very first year of their organization that they keenly rejoice in their might and glory in the possibilities of the future. Whether might is right, seems to have been a secondary consideration, though the officers soon realized that it was at times better to bend than to break. The idea, however, that the rights of the individual are altogether insignificant as compared with the financial welfare of the druggists as a body, undoubtedly prevails and has found expression.

In addition to the question of the power derived from organization there is another point that has not yet received due consideration and deliberation. The organization of the N. A. R. D. was the spontaneous manifestation of an outburst of indignation. It is but natural that academic discussions were not wanted and could have received but little attention. The demand of the hour was action rather than theorizing. The result we all know.

A plan for uniform organization was presented by the writer somewhat more than a year ago. * Neither this plan based on the con-

* Bull. of Pharm., 12, p. 485.

gressional district as a unit, nor that based on counties, which can never constitute a rational or just unit for representation, has been followed. Organization has been the watch-word, as already stated, but immediate results were wanted and little attention was bestowed on how they were effected or what they represented. The possible outcome of indiscriminate organization and representation has already been pointed out.* The exaggeration indulged in was caused by the peculiar cropping out of national and race feelings that are manifesting themselves in pharmaceutical circles in this country. That they were not without foundation becomes apparent from the list of associations represented at the Cincinnati meeting according to the Report of the Secretary of the N. A. R. D. Twenty-three states were represented by seventy-six state and local associations. Half of these associations were from five states: nine each from Illinois, Indiana and Ohio, six from New York and five from Michigan. In order to secure not only proper but more equitable representation in the future, it will be necessary to give more attention to organization in accordance with some well defined principle.

**Singleness of Purpose.** When the N. A. R. D. was organized in St. Louis in the fall of 1898, it looked for a time as though it might become in part at least a rival to the Am. Pharm. Ass'n. This would have been unfortunate for both associations. The past year, however, has shown that if such thoughts were entertained by any one, a kind of intuition has set such persons right. A sober second thought has taught every one that there must be no rivalry between the two national organizations, both of which consist largely or entirely of retail druggists. The members of the N. A. R. D. have realized that the Am. Pharm. Ass'n. is better fitted to do certain things, and the older association should be grateful to the younger for having relieved it of a supposed responsibility which it never could meet.†

Most side issues presented at St. Louis were dropped and the N. A. R. D. has practically put its entire strength on the attempt to insist on the maintenance of original prices of so-called patent and other proprietary medicines. The various organizations which were formed served merely as a means to this end. That much has been

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* This journal, vol. 17, p. 99.

† Comp. report of Put-in-Bay meeting, vol. 17, p. 436. Comp. also editorial in December 1899 number of Bulletin of Pharmacy.

accomplished in this direction, no one seems to be inclined to deny. Yet it has unquestionably been accomplished with the loss of considerable individuality. In the big machine that has become a necessity, the otherwise legitimate wishes of the individual cannot receive the coveted respect. The suppression of individual rights may at times be justified, but to the progressive, thinking American business man it must come with something of a shock. Only a few years ago he scouted as a free American the bureaucratic dictates of European governments. To-day, whether he will or not, he must buy or sell as directed by the united brethren of his own calling. The manufacturer must sell to jobbers only, or he will be boycotted; the jobber must not sell to department stores, or he will be deprived of the privilege of buying and selling "patent medicines"; the retailer has no longer the inherent right to develop gradually into a wholesaler.

This may be called fraternalism rather than paternalism, the European form, but it would seem that the ultimate effect on the individual must be much the same.

That no amount of supervision will keep such an enormous machine in perfect working order, can readily be imagined. We know that manufacturers have from the beginning refused to submit and have preferred to be boycotted; others have since been reported as having withdrawn, because retail druggists themselves sold to department stores. Each branch is watching the other more or less suspiciously and constant police and detective duty has become a necessity. Yet with an enthusiasm and an endurance that are worthy of a higher and nobler cause, the officers of the association are bent on making the venture a success, if success lies within human possibility.

It is true that other matters have received some attention at the Cincinnati meeting. Thus the question of legislation was touched upon, but nothing of any import has been accomplished or is likely to be accomplished during the coming year. A resolution on trade marks and patents was also adopted which may be all right, but a sentence of which seems to lose its force when coming from such a body as the N. A. R. D. Referring to the product patent the resolution states that it "not only creates a monopoly, but strangles competition." All references to "strangling competition" ought to be avoided hereafter.

**The possible outcome of the movement.** To venture upon the enforcement of rigid rules and regulations, affecting the manufacture, jobbing and retailing of patent medicines by the three branches of the drug trade, in a country as large as ours, seems almost like an act of madness. Yet it has been undertaken and seems to have met with a reasonable measure of success thus far. But the question may well arise, how long will a few be willing to spend their time and best energies in an undertaking like this. For it is generally admitted that although both conventions have been attended by enthusiastic delegates, the active work has been accomplished by comparatively few.

Indeed the outlook is more one of desperation than of hopefulness. Not many years ago an attempt of this kind would have been decried as unAmerican, but we have become so accustomed to the despotic rulings of both trades unions and moneyed trusts that we no longer discuss the question of right and wrong, but submit to what seems inevitable.

It is useless to prophesy success or failure as to the possibility of maintaining prices on patent medicines. If the present movement brings the druggists together into proper organizations, it will have accomplished much. For this very reason, however, more attention should be given to the subject of right organization. With proper organizations as a basis, the druggists can and will give their attention to subjects which in the long run will prove of greater importance to them than the screwing up of prices on articles which untrained department store clerks can sell as well as the trained licentiate. The questions of dishonest competition, of incompetence, of prices for professional services, of commercial cooperation, of Sunday closing and many others may well receive the attention of local as well as national organizations. Even if the sale of patent medicines constitutes fifty percent of the trade of some jobbers, there is still more to pharmacy than the vending of secret remedies, the sale of which will be prohibited when the public becomes sufficiently enlightened to refuse to be duped by charlatans and to be tyrannized by a press which receives no small percentage of its revenues from these quacks.

# A Distilling Column for Illustrating the Principle of Fractional Distillation and of Dephlegmators.

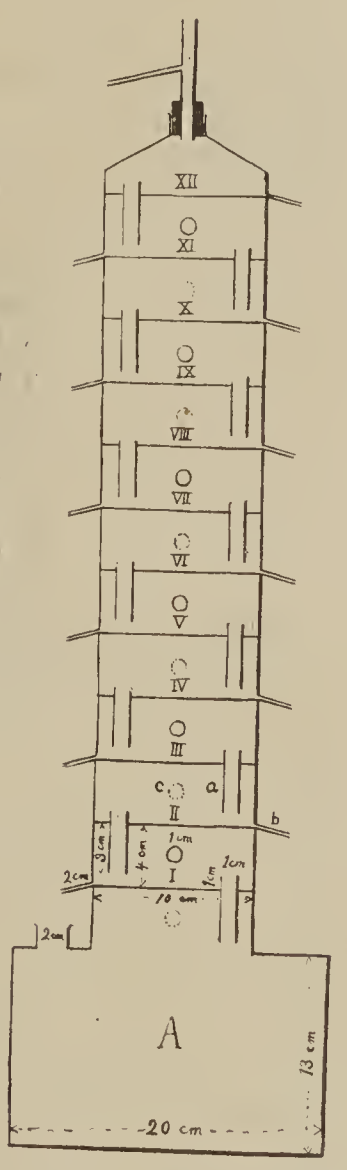
By *Oswald Schreiner.*

To give a satisfactory explanation of the principle of fractional distillation and the use of distilling columns or dephlegmators for the more perfect separation of substances by distillation, to a beginner, is not an easy matter. The mere statement that in the dephlegmator the less volatile constituent is condensed and flows back into the distilling flask, while the more volatile constituent passes upward and finally goes over into the condenser, does not sufficiently explain the principle. Moreover, the action of the large distilling columns or dephlegmators, as they are at present employed in the alcohol distilleries, with their large number of small chambers piled on top of one another, cannot be explained by words alone to the student. It is necessary to be able actually to show him experimentally that each of these chambers contains a spirit which is richer in alcohol as we go up in the column, and also that the boiling temperature is different in these chambers. It was with the view of giving an experimental proof of these principles that the distilling column shown in the accompanying figure was designed.

The entire apparatus, with the exception of the glass distilling tube at the top of the apparatus, is constructed of galvanized iron. It consists of a round receptacle or still (*A*), 20 cm. in diameter and 13 cm. high and is provided with a hole through which the liquid to be distilled is introduced. On top of this still are placed twelve chambers, each being 10 cm. in diameter and 4 cm. high. These chambers are connected one with the other by a tube (*a*). This tube is 1 cm. in diameter and just 4 cm. long and is fastened in the diaphragm between the chambers so that 1 cm. projects into the upper chamber and 3 cm. into the lower chamber. A similar tube is inserted in the next diaphragm, but on the opposite side of the chamber, so that the vapors in going from tube to tube must circulate through the chamber. The outlet tube (*b*) at the bottom is stopped up by means of a short rubber tube closed at one end by a small glass rod. Each chamber is also provided with a 1 cm. lateral opening (*c*), alternately on opposite sides of the apparatus as shown by the full and dotted circles in the figure. These openings receive a well

fitting cork carrying a thermometer. The distilling tube at the top is also provided with a thermometer and connected with an ordinary Liebig condenser.

The operation is as follows. Two litres of the dilute alcohol to be distilled are put into the still (*A*), the opening corked and heat applied with a Bunsen burner. The first vapors given off are very rich in alcohol, but condense in the cold chambers above. As the operation goes on, the richer alcohol is driven from chamber to chamber, upward by the hotter (higher boiling) vapors in the chamber below until it finally distills over. In being driven thus from chamber to chamber, the thermometer will show successively a gradual rise in temperature. After the distillation has gone on for some time, the liquid condensed in the chambers has collected on the bottom, and when it has risen to the height of the tube (*a*), it flows over and runs into the next lower chamber and there the vapors richer in alcohol are again distilled off and go upward. This flowing down and revaporization of the alcohol is continuously taking place. The result is that at the end of the operation the original dilute alcohol has been separated into a fairly pure alcohol which has distilled over into the condenser and less pure fractions in each of the chambers, the percentage strength of the alcohol decreasing as we go down in the apparatus. In order to show this, the apparatus is allowed to cool and the liquid which has condensed in each chamber drawn off through the outlet tube (*b*) into a small flask. By taking the specific gravity of each of these portions, their percentage strength in alcohol may be found by comparison with a table. Some of the experimental figures obtained by means of this apparatus may be of interest.




Two experiments were made in which the time of distillation was different. The strength of the alcohol used in the first experiment was 42.27 percent. The thermometers used had all been carefully calibrated by comparison with a standard thermometer. The rise in the thermometers was noted at the end of every 30 minutes, after

they had become thoroughly heated. When four fractions of 100 cc. each had distilled over, the operation was stopped and the apparatus allowed to cool. The liquid in each chamber was then drawn off, its specific gravity determined by means of a Geissler pycnometer at 20° and its alcoholic strength found from a table. The results are given in the following tables:

**Table I.**

**Thermometer Readings.**

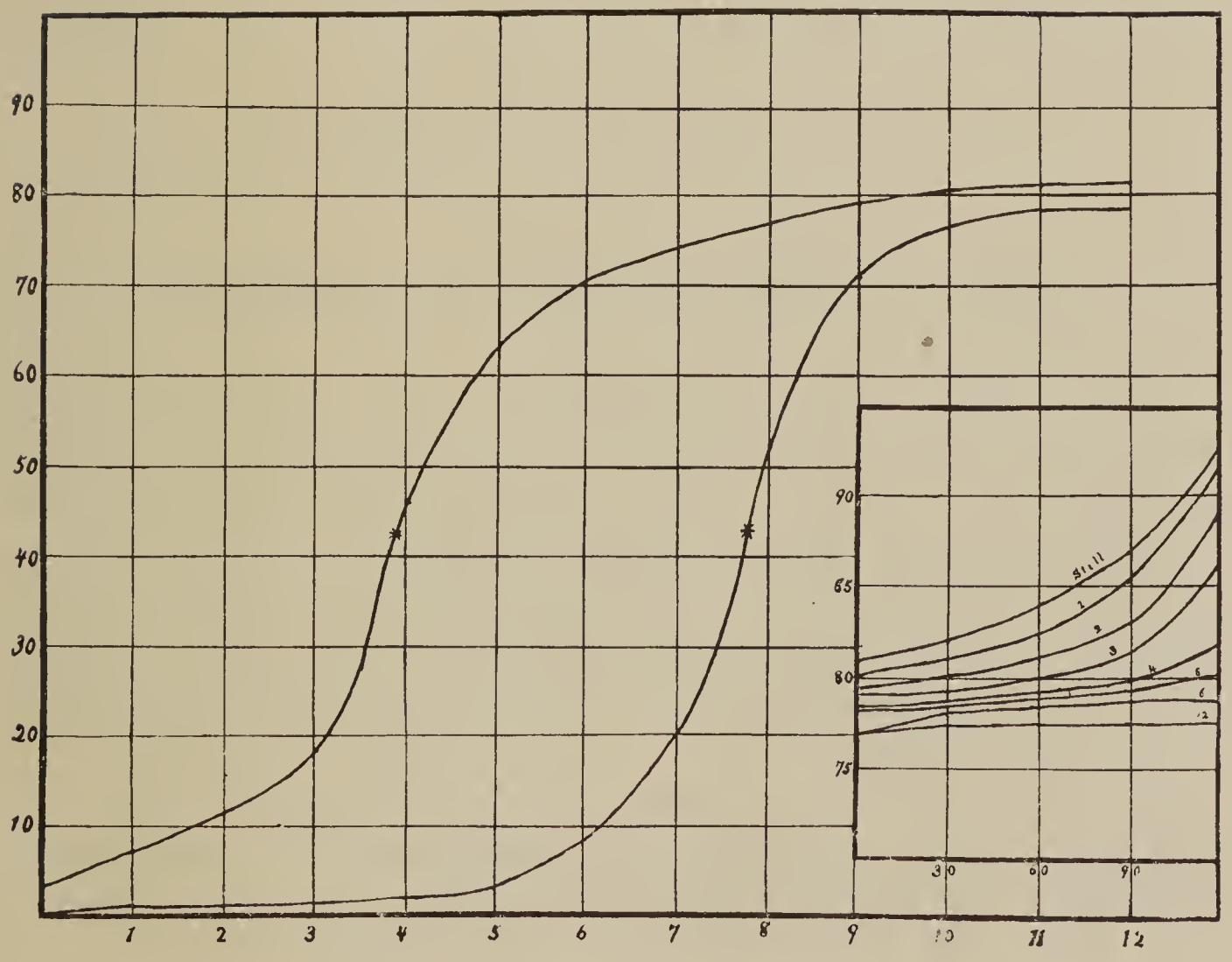
| Thermometer in chamber No. | 0 min. | 30 min. | 60 min. | 90 min. | 120 min. |
|---|---|---|---|---|---|
| *A* | 80.9 | 81.8 | 83.7 | 86.9 | 92.8 |
| 1. | 80.2 | 81.0 | 82.4 | 85.5 | 92.0 |
| 2. | 79.3 | 79.9 | 80.8 | 82.9 | 89.4 |
| 3. | 79.0 | 79.3 | 80.1 | 81.3 | 86.4 |
| 4. | 78.2 | 79.0 | 79.1 | 79.8 | 81.8 |
| 5. | 78.1 | 78.3 | 78.9 | 79.3 | 80.3 |
| 6. | 77.6 | 77.9 | 78.3 | 78.5 | 78.5 |
| 7. | 77.6 | 77.7 | 77.9 | 78.2 | 78.5 |
| 8. | 77.4 | 77.4 | 77.4 | 77.5 | 77.6 |
| 9. | 77.6 | 77.6 | 77.8 | 77.9 | 78.0 |
| 10. | 77.1 | 77.3 | 77.5 | 77.6 | 77.7 |
| 11. | 77.0 | 77.2 | 77.4 | 77.4 | 77.6 |
| 12. | 77.5 | 77.5 | 77.6 | 77.6 | 77.6 |

**Table II.**

| | Specific Gravity. | Percent Alcohol. |
|---|---|---|
| Dilute Alcohol. | .9351 | 42.27 |
| Fraction 1. | .8270 | 88.49 |
| " 2. | .8271 | 88.44 |
| " 3. | .8273 | 88.40 |
| " 4. | .8318 | 86.61 |
| Chamber 12. | .8456 | 81.19 |
| " 11. | .8455 | 81.23 |
| " 10. | .8471 | 80.56 |
| " 9. | .8504 | 79.25 |
| " 8. | .8558 | 77.04 |
| " 7. | .8633 | 73.92 |
| " 6. | .8691 | 71.47 |
| " 5. | .8884 | 63.27 |
| " 4. | .9273 | 46.00 |
| " 3. | .9735 | 18.46 |
| " 2. | .9823 | 11.24 |
| " 1. | .9876 | 7.32 |
| Residue in *A*. | .9942 | 3.20 |

**Table III.**

| | Specific Gravity. | Percent Alcohol. |
|---|---|---|
| Dilute Alcohol. | .9343 | 42.69 |
| Fraction 1. | .8273 | 88.40 |
| " 2. | .8309 | 87.00 |
| " 3. | .8309 | 87.00 |
| " 4. | .8296 | 87.50 |
| " 5. | .8333 | 86.07 |
| Chamber 12. | .8516 | 78.76 |
| " 11. | .8515 | 78.81 |
| " 10. | .8567 | 76.66 |
| " 9. | .8690 | 71.55 |
| " 8. | .8985 | 58.93 |
| " 7. | .9711 | 20.47 |
| " 6. | .9856 | 8.78 |
| " 5. | .9945 | 3.04 |
| " 4. | .9964 | 1.92 |
| " 3. | .9972 | 1.48 |
| " 2. | .9983 | 0.91 |
| " 1. | .9980 | 1.07 |
| Residue in A. | .9996 | 0.02 |



The second experiment was the same as the first except that the distillation was carried on much further, 625 cc. of distillate being obtained. The results are given in Table III.

In the accompanying plat the foregoing results are given graphically. The ordinates represent the percentage strengths of the liquids in the chambers, the abscissas the chambers from the still upward. The asterisk on the curves marks the percentage strength of the original dilute alcohol. A glance at these curves shows that a separation of alcohol and water has taken place in the chambers and that this separation is the more perfect the longer the time of distillation.

The small plat in the lower corner represents graphically the temperature observed in the chambers in the course of the first distillation. The ordinates represent the temperatures and the abscissas the time. The curves from 6 to 12 were omitted for the sake of clearness in drawing; a glance at Table I. will show that these curves all lie close together and are nearly horizontal. The curves show that the temperature in the still rose gradually at first and then more rapidly. The same is true in the lower chambers. In the upper chambers, however, the temperature remained fairly constant, especially so in the twelfth.

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## Notes on Modern Alkaloid Investigations.*

Of the large groups of substances of undetermined nature in organic chemistry the albumens have been only recently attacked. The investigation of the terpenes is in rapid progress. The field of the alkaloids is, however, in spite of long and tedious work but little cleared up. The progress that might be recorded is really very small.

The reason for this lies, on the one hand, in the relatively large molecules and the complicated constitution of these vegetable bases, as well as, on the other hand, in the peculiar historic development of their investigation.

The older workers in this field, like Sertürner[1]—a German apo-

* Translated from the Pharmaceutische Zeitung, 44, p. 838, by Oswald Schreiner, Instructor in Pharmaceutical Technique, Univ. of Wis.

[1] Sertürner, Ueber das Morphium, eine neue salzfähige Grundlage und die Mekonsäure als Hauptbestandtheil des Opiums.

thecary—Liebig, Laurent and Gerhardt, were satisfied with preparing the alkaloids in a pure state from the natural products. The results of their investigations but seldom go beyond the determination of the percentage composition of these bases.

It was relatively late when the splitting up of the alkaloids was resorted to. For this purpose were used especially the lime and zinc-dust distillation as well as different oxidation methods.

With a large number of alkaloids, for instance, quinine and cinchonine, strychnine and brucine, atropine, coniine, nicotine, piperine and berberine, derivatives of pyridine (pyridinecarbonic acid, bromated pyridine, pyridine and its homologues, also those of chinoline) were obtained.

This result induced Koenigs[2] to draw the conclusion that "those derivatives of pyridine found in plants are to be considered as alkaloids," and expressed the hope that it may sometime be possible to consider the alkaloids as more or less simple derivatives of pyridine, in a manner similar to that now used for deriving the aromatic compounds from benzol.

This hope of Koenigs was not realized. On further study of the alkaloids it was found that they are exceedingly complicated and do not allow of being forced into a system.

The view of Koenigs was of importance in more than one way for the investigation of the alkaloids and closely related bodies. This idea at once stimulated successfully the investigation of the pyridine and chinoline groups. It was hoped that with their aid it would be possible to prepare the alkaloids synthetically. A brilliant result of this was the complete synthesis of coniine by Ladenburg[3] on the basis of the work of A. W. v. Hoffmann in the year 1886. Besides coniine it has been possible to build up synthetically several other alkaloids, either wholly or in part.

Further, we are indebted to the exceedingly thorough investigation of the pyridine and chinoline groups for a large number of new remedies. Thus kairine represents a methyl- or ethyl-o-oxytetrahydrochinoline. Kairoline is methyl- or ethyltetrahydrochinoline; thalline is p-methoxytetrahydrochinoline. In loretine we find an iodoxychinoline sulfo acid, etc.

As stimulating as the views of Koenigs may have been in this field, it cannot be denied that they had in a certain sense a retarding

[2] W. Koenigs, Studien über Alkaloide. München.
[3] Ladenburg, Synthese der aktiven Coniine. Ber. 19, p. 2578.

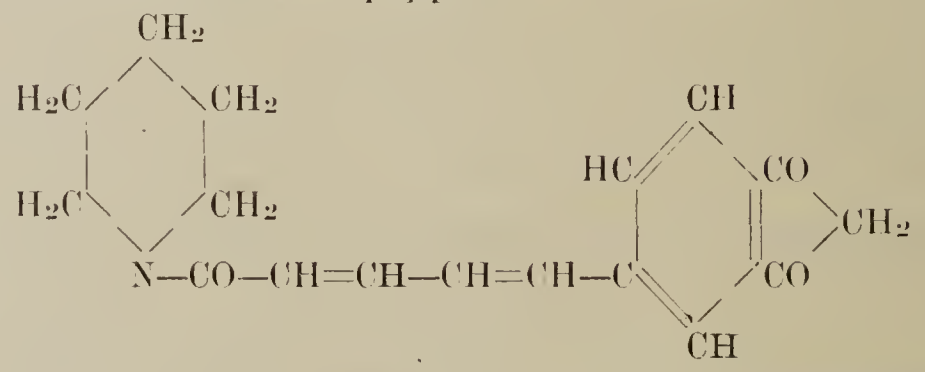
influence on the further investigation of the plant bases, as a too one-sided view was taken in working with the alkaloids.

Theobromine and caffeine, found in plants and formerly considered as alkaloids, were recognized as derivatives of uric acid and could, therefore, be no longer classified with the alkaloids according to Koenigs' view. The exclusion of the purine group is explainable, as it possesses in many respects deviating properties. Morphine, as well as thebaine and codeine must, however, under all conditions be counted with the alkaloids. These compounds are certainly no pyridine derivatives. The proof of this is furnished by the work of Knorr, which will be considered in detail under morphine.

For the highly interesting choline group—choline, neurine, muskarine belong to this group—Wurtz[4] has already shown by his synthesis of choline itself, this ammonium base so widely distributed, that it is not to be classed with the pyridine derivatives.

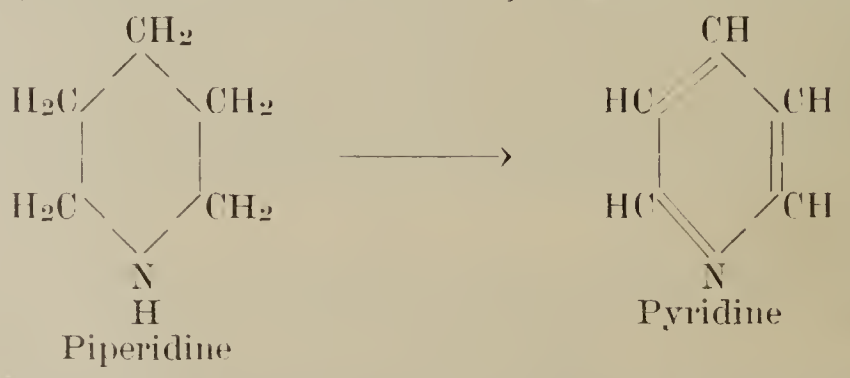
From what has been said it will be seen that no general rules can be laid down in regard to the alkaloids. The correctness of this view is shown by the manifold structure of the plant bases. The result of the experimental investigations in the last few years is to be somewhat closely considered in the following.

Piperine, the alkaloid of pepper,



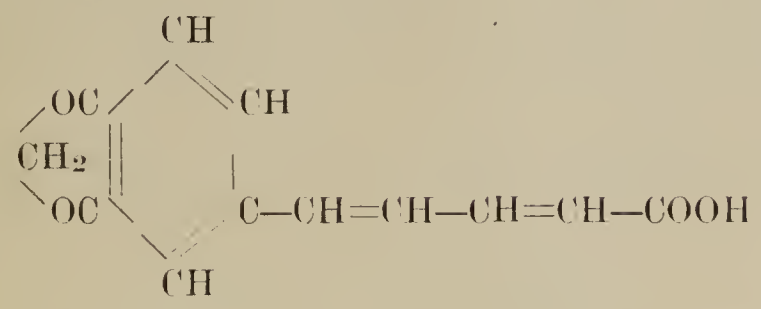
has been recognized as an amide-like compound of piperidine with piperic acid.

Piperidine was converted into pyridine by heating with sulphuric acid to 300° and its close relation to pyridine thus demonstrated.




[4] A. Wurtz, Ueber die Synthese des Neurins (Cholins). Annal. Suppl. 6, p. 116.

Piperic acid was recognized by Fittig as a 3-4-methylenedioxy-cinnamenylacrylic acid:

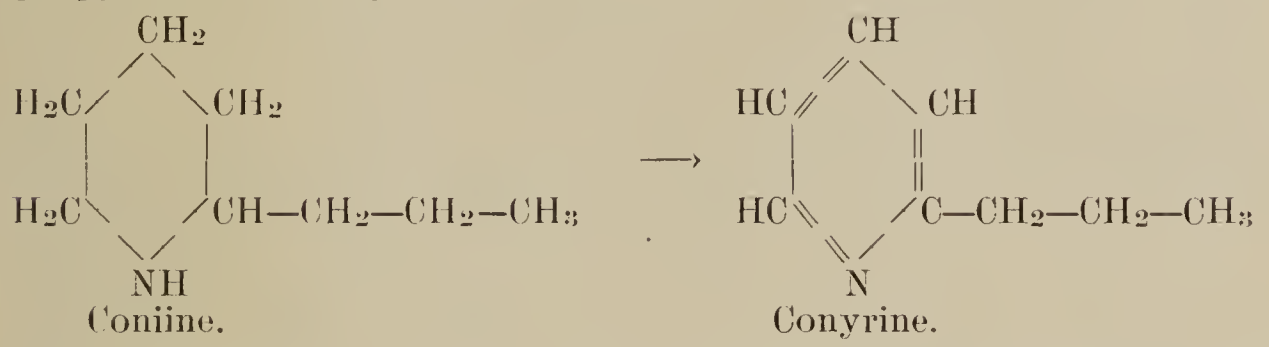


and prepared by means of Perkin's reaction from piperonal through piperylacrolein.

By the action of piperyl chloride on piperidine the synthesis of piperine has been realized.

The complete synthesis of coniine, of dextrogyrate *a*-normal propylpiperidine was accomplished, as already mentioned by Ladenburg in 1886. Even earlier he had, on the basis of the following experimental results, set up the constitutional formula for the alkaloid.

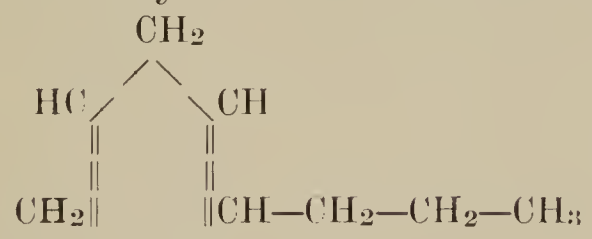
By the distillation with zinc-dust coniine yields conyrine, the *a*-propylpyridine corresponding to coniine.



Coniine. Conyrine.

The constitution of the latter was shown by converting it on the one hand into picolinic acid (*a*-carbonic acid of pyridine) and on the other hand by reduction with hydriodic acid and phosphorus to octane and ammonia.

The exhaustive methylation according to Hofmann yields the unsaturated hydrocarbon conylene.



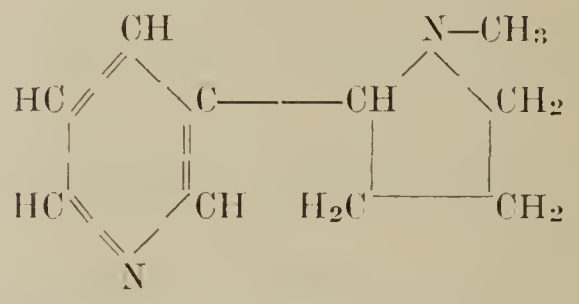
and trimethylamine.

Ladenburg's synthesis was accomplished through allyl pyridine by reduction of the latter to inactive coniine. This was resolved into its optically active components[5] by fractional crystallization by means

[5] Ladenburg, Annal. d. Chem. u. Ph., 247, p. 86.

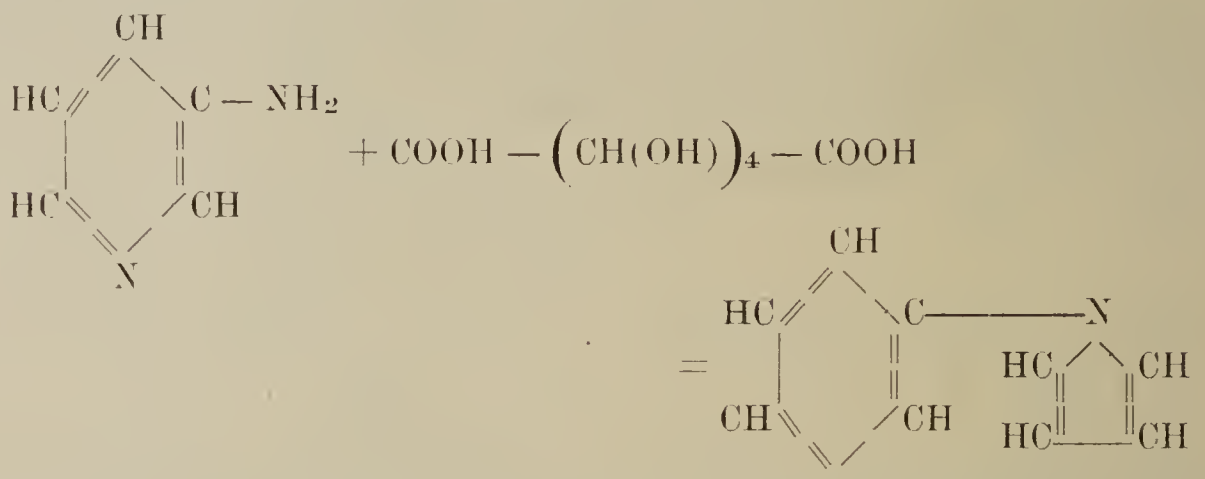
of dextrogyrate tartaric acid. The dextrogyrate tartaric acid salt of the dextrogyrate coniine separates out first and is decomposed with sodium hydrate solution into the d-coniine identical with that found in nature.

The synthesis of nicotine has not yet been completely accomplished. According to Pinner,[6] who has set up the following formula:

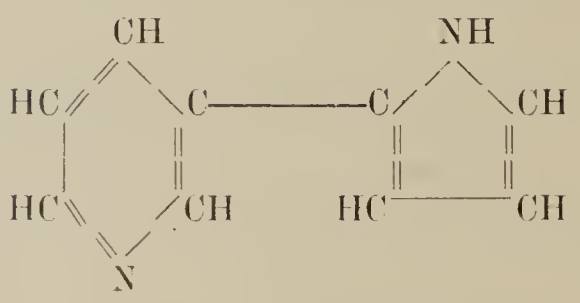


it is $\alpha$-$\beta$-pyridyltetrahydro-n-methylpyrrol.

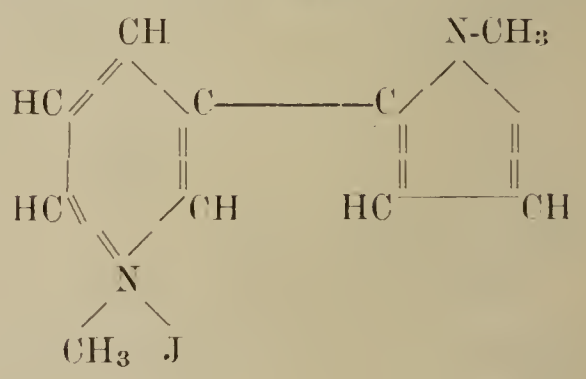
Amé Pictet and Crépieux[7] obtained from the $\beta$-amidopyridine by distillation with mucic acid N-$\beta$-pyridylpyrrol.



This rearranges itself into $\alpha$-$\beta$-pyridylpyrrol when conducted through tubes heated to a dull-red heat.



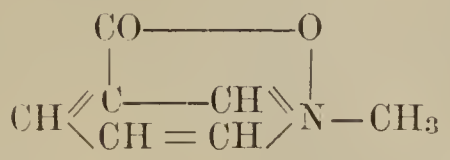
From this, with methyl iodide, they apparently obtained nicotyrine iodomethylate



[6] A. Pinner, Ueber Nikotine, Ber. 26, p. 292.
[7] Amé Pictet u. Crépieux, Ueber Phenyl und Pyridylpyrole und die Konstitution des Nikotins.

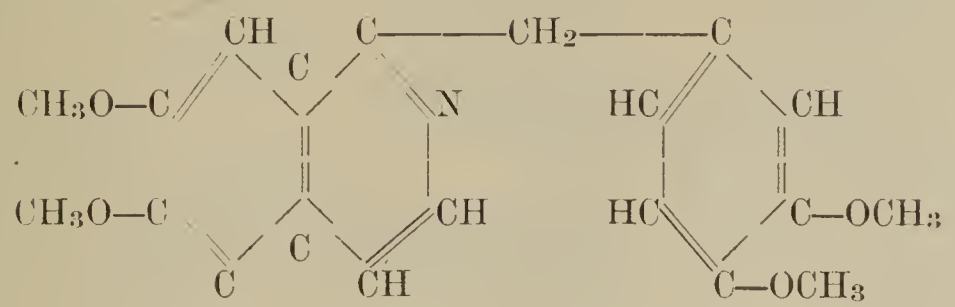
A further reduction of the pyrrol ring to a tetrahydropyrrol ring (pyrrolidine) has not been successful.

The synthesis of trigonelline has, however, been completely attained. This alkaloid is found in fenugreek as well as together with choline in the seed of the pea and of hemp. It is a nicotinic acid betaine:

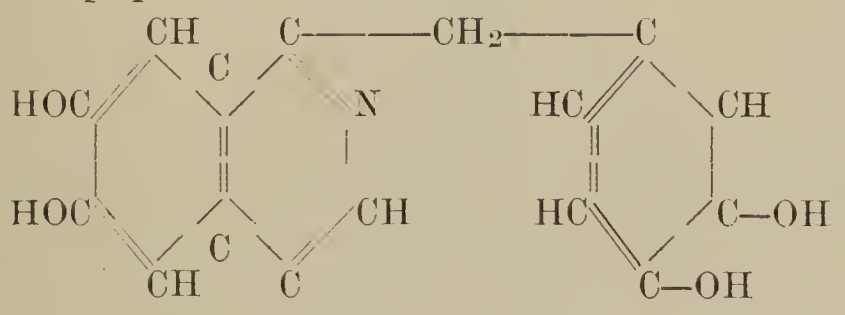


Jahns recognized it as identical with the nicotinic acid betaine prepared synthetically by Hantzsch.

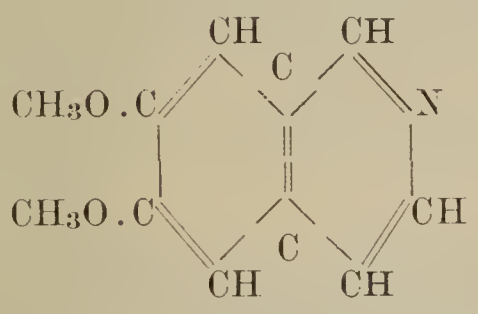
The conclusive determination of the constitution of papaverine has been successfully accomplished by Goldschmidt. He sets up the following formula:



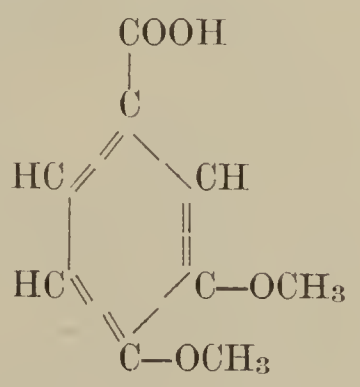
All its "Abbau" reactions are readily explained by this formula. On treating with hydriodic acid according to Zeissel, four methyl groups are split off and papaveroline results:



Fused with caustic potash, papaverine yields dimethoxyisochinoline

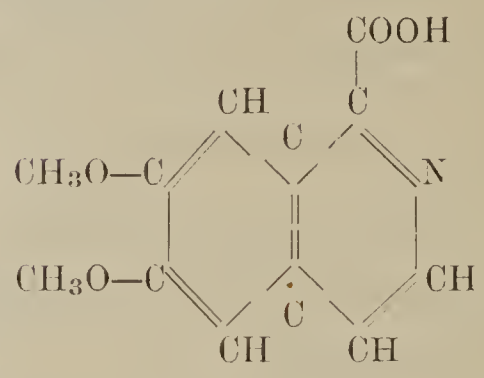


and veratric acid

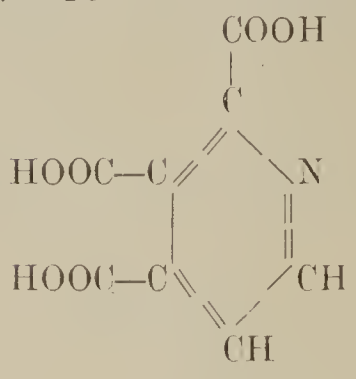


By oxidation with potassium permanganate papaveraldine, tetramethyloxybenzoylisochinoline is obtained. The $CH_2$ group uniting

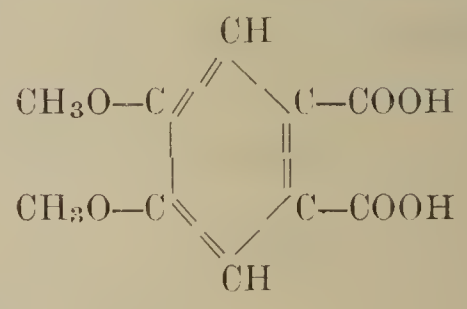
the isochinoline ring with the benzol ring is oxidized by this treatment to the ketone group CO. On further oxidation there results first dimethoxyisochinoline carbonic acid,




then *α-β-γ*-pyridine tricarbonic acid




and metahemipinic acid




(To be continued.)

## Arrangement and Fitting of Drug Stores.*

The two sketches in this number represent two French styles, the Rococo and the Empire. The French designate the various styles from the middle of the 17th century to the close of the 18th century according to their respective rulers: *Louis-quatorze*, *Louis-quinze*, *Louis-seize*. The prevalent style after the reestablishment of monarchical government is designated as the style of the Empire.

The term rococo is supposed to be derived either from the French word *roc*, a rock,† or *rocaille*, grotto. It does not apply to architecture, but to architectural decorations, furniture, utensils, jewelry, etc. The term is now generally used in art, literature, etc., for everything that is odd and old-fashioned.

This style prevailed in France during the first half of the 18th century and continued in Germany to about the close of that century. Rythm takes the place of symmetry and one of the principal forms of decoration is the shell. Light, rosy colors prevail.

† Continued from vol. 17, p. 564.

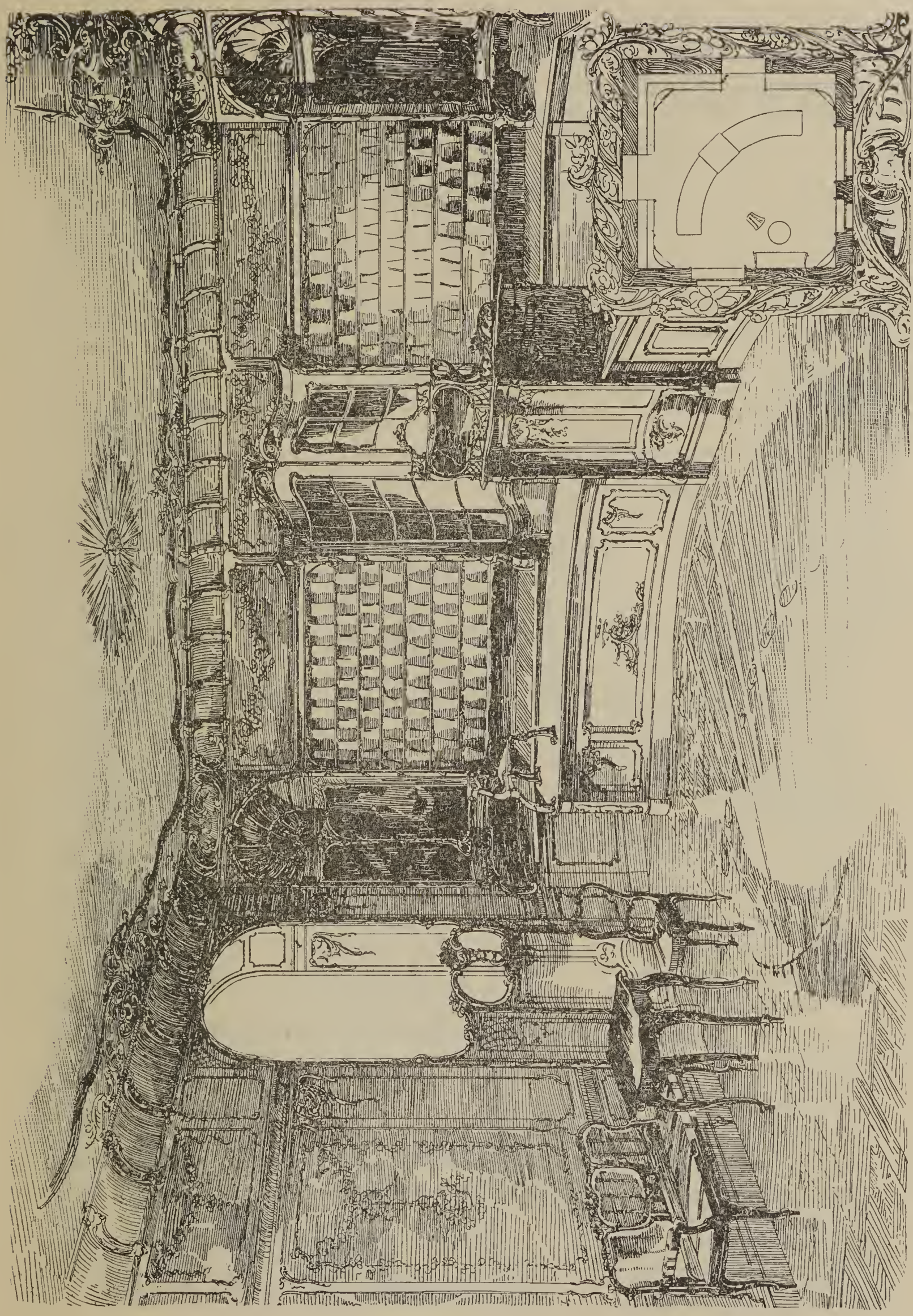


Fig. 6. Equipment of a pharmacy in accordance with the Rococo style.
Designed by the "Hof-Moebelfabrik" of Franz Schneider in Leipzig.

On account of the short life of this particular style, also because of the fragile character of the ornamentation, but few apothecary shops were equipped in accordance with this style. However, several still exist, e. g. the "Hofapotheke" in Salzburg and the storage room of the "Hofapotheke" in Bamberg.

The Rococo stamped its impress particularly upon European porcelain, notably that of Meissen and Sèvres. Not only has the form of drug containers been adapted to this style, but the label as well.

Fig. 6 reproduces a design for an equipment in accordance with the Rococo style. The ground plan shows the rectangular character of the room with its two windows and three doors. The prescription desk with the two wings of sales counters constitute an arc, the concave side of which is opposite the corner nearest the entrance.

The scroll work crowning the prescription desk is similar to that of a prescription desk in the Germanic Museum made of wrought iron.

Besides serving the purpose of ornament, it was used for hanging up the hand scales generally used by German apothecaries. The small what-nots at the ends of the counter, the decorations in the pannels, also those in the frieses above the shelving and those of the ceiling are of the peculiar Rococo design. Those of the ceiling and the frieses are made of stucco. The cupboards in the corners are vaulted with shell-like designs.

The wood work is to be light in color. Either a very light natural wood may be selected, or soft pine painted with a light tint, with some gold for the ornamentations.

After France had recovered somewhat from the shock of the revolution and prosperity began to return under the empire, it is curious to observe how completely the style had changed. Everyone believed, or tried to believe, that the empire of France was the legitimate successor, or a reproduction, of that of Rome; and all things which were neither real nor essential were made to conform to the delusion.

In Germany there still exist a number of apothecary shops arranged in accordance with this style. Fig. 7 represents a design for a modern store arranged and equipped in accordance with classic ideas as modified by the French.

The ground plan represents a square from which two corners have been cut off, the two short sides of the hexagon thus produced being provided with doors. The two windows are so arranged as to

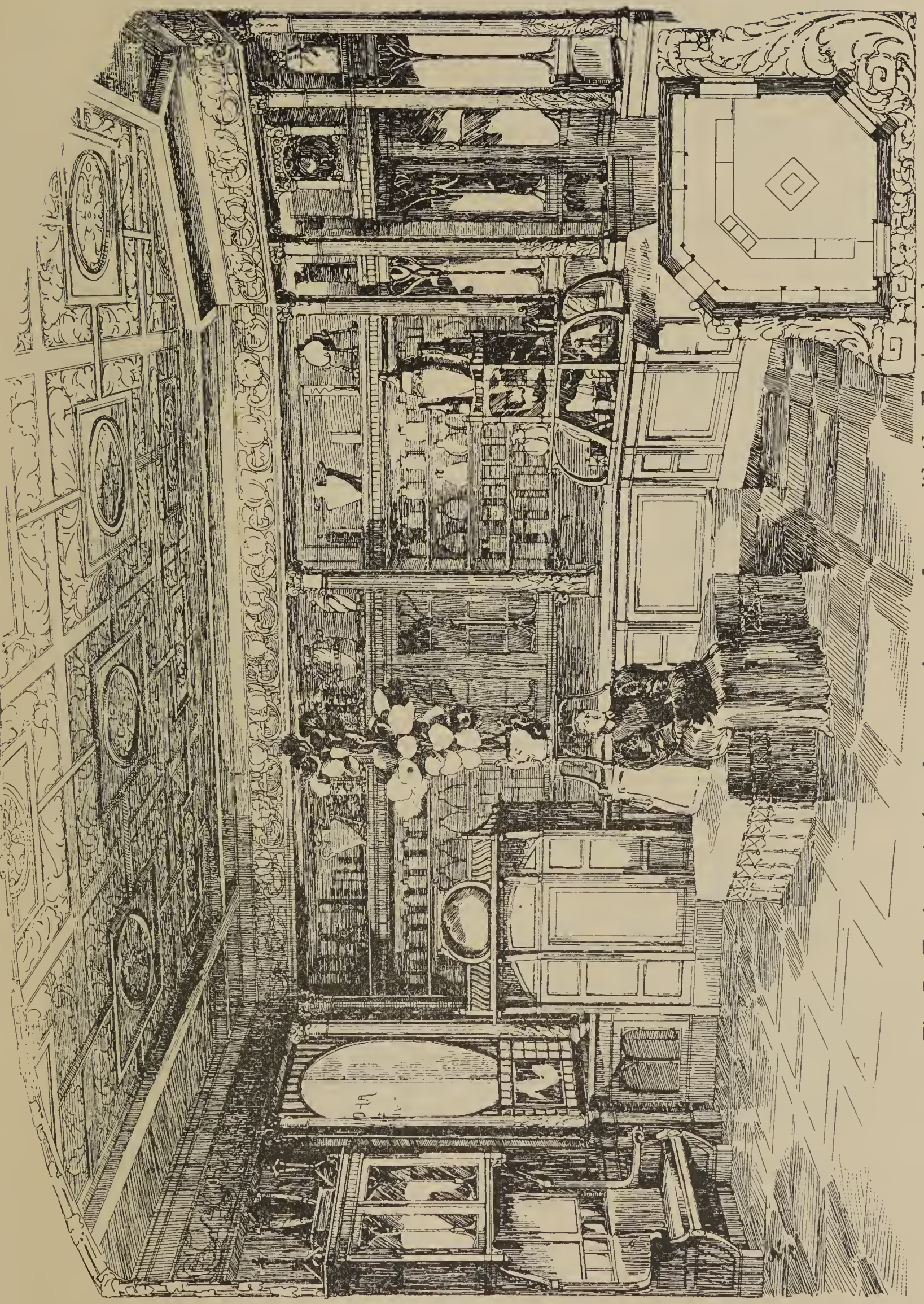


**Fig. 7. Equipment of a pharmacy in accordance with the Empire style.**
Designed by the "Hof-Moebelfabrik" of Franz Schneider in Leipzig.

throw light on the shelving and counters. One of the two prescription counters could well be used as a writing desk.

The modified Greek columns, the arrangement of shelving and cases, the style of decoration and other matters of detail become quite apparent upon a careful study of the sketch.

# Popular German Names of Domestic Drugs and Medicines.*

By *Fr. Hoffmann.*

Ochsenmark—*Medulla bovina.*
Ochsenzungensaft—*Sir. liquiritiae.*
Ockelskörner—*Sem. cocculi* (*Pulv. pc. dicul.*) (!)
Odergeist—*Spir. rosmarini.*
Odermännig—*Herb. agrimoniae.*
Oel, flüchtiges—*Liniment. ammoniae.*
Oelsamen—*Sem. lini.*
Ohrenöl—*Ol. camphor, Glycerinum.*
Ohrenpflästerchen—*Empl. Canth. per-*
Oland, Olath—*Rad. helenii.* [*pet.*
Olen Schaden-Pflaster—*Empl. fuscum*
Oleumpopuleum—*Ungt. popoleum.*
Oleumtartari—*Liq. kalii carbon.*
Olte Lore—*Ungt. popodeum, Ungt. laurinum.*
Onegilke—*Rad. angelicae.*
Operment—*Auripigmentum.* (!)
Opodeldoc, flüssiger—*Liniment saponis.*
Opodeldoctropfen—*Spir. camphorat., Linim. saponis.*
Orand, weiss—*Herb. marrubii.*
Orangenblötter, blüthen, -schalen—*Fol., Flor., Cort. aurantii.*
Orangenwasser—*Aq. flor. aurantii.*
Orkanetwurzel—*Rad. alcannae.*
Orlean, Annatto—*Bixa orellana.*
Orum (der Juden)—*Auripigment. pulv.*
Osterblumen—*Flor. bellidis, Flor. hepaticae.*
Osterluzei, lange od. runde—*Rad. aristoloch. long.* od. *rotund.*
Osterluzeiwasser—(*Aq. aromatica.*)
Ostritschenwurzel } *Rad. ostruthii s.*
Ostritzwurzel } *imperatorii.*
Ottenmindenthee—*Herb. agrimoniae.*
Otterfett—(*Ol. jecoris.*)
Oxycrocipflaster—*Empl. oxycroceum.*

Päden—*Rad. graminis.*
Päonienblätter—*Flor. paeoniae* (*Flor rhoead.*)
Päonienkörner—*Sem. Paeoniae.*
Pätscheleblüthen—*Flor. sambuci.*
Palmbutter—*Ungt. flavum.*
Palmpflaster—*Empl. plumbi, U. S. P.*
Panamaholz, -rinde, -wurzel—*Cort. quillajae.*
Pappelblätter—*Fol. malvae.*
Pappelblumen—*Flor. malvae vulgaris*
Pappelkäse—*Fol. malvae.*
Pappelknospen—*Gemmae populi.*
Pappelkraut—*Fol. malvae.*
Pappelrosen—*Flor. malvae arboreae.*
Pappelsalbe—*Ungt. populi.*
Paprica—*Fruct. capsici.*
Paracelsuspflaster—*Empl. fuscum.*
Paradieskörner—*Grana paradisi.*
Paraguai Roux—*Tinct. spilanthis.*
Parakresse—*Herb. spilanthis.*
Paratinktur—*Tinct. spilanthis.*

* Continued from vol. 17, p. 573.

Pech, flüssiges—*Pix liquida.*
" gelbes, Burgundisches, weisses —*Resina pini.*
" schwarzes—*Pix navalis.*
Peden—*Rad. graminis.*
Peersamen—*Fruct. phellandrii.*
Peperkähm, schwarzen—*Sem. nigellae.*
Pergamentspäne—*Cornu cervi rasp.*
Perlasche—*Kali carb. dep.*
Perlmoos—*Caragaheen.*
Perlpulver—*Lycopodium.*
Perlsalz—*Natr. phosphoric.*
Pernotenpflaster—*Empl. meliloti.*
Persiliensamen—*Fruct. petrosclini.*
Pestessig—*Acetum aromaticum.*
Pestilenzkraut—*Herb. farfarae.*
Pestilenztropfen—*Tinct. castorei.*
Pestilenzwurzel—*Rad. petasitidis.*
Pesttropfen—*Elix. ad longam vitam, Elix. proprietatis.*
Peterles Samen—*Sem. paeoniae.*
Peterles Wurzel—*Rad. petroselini.*
Peteröl—*Petroleum.*
Petersilie—*Petroselinum.*
Petersilienpulver—(*Pulv. pediculor.*)
Petersilienpomade — *Ungt. hydrarg. alb.* (!)
Petersiliensamen—*Fruct. petroselini.*
Peterskraut—*Herb. parietariae.*
Peters Schlüssel — *Flor. primulae veris.*
Petonienkörner—*Sem. paeoniae.*
Pfaffenkraut—*Herb. melissae.*
Pfaffenkümmel—*Fruct. cumini.*
Pfeffer, langer—*Piper longum.*
" spanischer—*Fruct. capsici.*
" weisser—*Piper album.*
Pfefferkraut—*Herb. saturejae.*
Pfefferkümmel—*Fruct. cumini.*
Pfefferminz—*Mentha piperita.*
Pfefferminzgeist—*Spir. menthae pip.*
Pfefferminzküchel—*Rot. menth. pip.*
Pfefferröslein—*Herb. taraxaci.*
Pfefferessenz—*Tinct. capsici.*
Pfeifenerde—*Bolus alba.*
Pfeifenstielpflaster—*Empl. cerussae, Empl. plumbi U. S. P.*
Pfeilwurzelmehl—*Amylum marantae.*
Pfengelthee—*Fruct. foeniculi.*
Pfennigkraut—*Herb. nummulariae.*
Pferdepulver—*Pulv. pro equis.*
Pferdesamen — *Fruct. phellandrii, Foenu graec.*
Pfirsichblüthenwasser—*Aq. amygdal. amar. dilut.*
Pflaster, Drnot'sches — *Sparadrap. Druoti.*
" gelbes—*Cerat. resini pini.*
Pflaster, graues—*Empl. hydrargyri.*
" Hamburger—*Empl. fuscum.*
" immerwährendes—*Empl. canth. perp.*
" Karmeliter—*Empl. fuscum.*
" Klepperbein'sches—(*Empl. aromat.*)
" Magen—*Empl. aromaticum.*
" Nürnberger—*Empl. fuscum.*
" Richter'sches—*Empl. fuscum.*
Pfriemenkraut — *Herb. scopariae. Herb. genistae.*
Philosophenöl—*Ol. philosoph.* (*Ol. lini 19 p., Ol. anim. foet. 1 p.*)
Pickbeere / Pickelbeere — *Fruct. myrtilli.*
Pieratzenöl / Pirasöl — *Ol. lumbric.* (*Ol. lini 49 p., Ol. anim. foet. 1 p.*)
Pigment, Piment—*Fruct. amomi.*
Pimpernelle—*Rad. pimpinellae.*
Pimpernellenessenz—*Tinct. pimpinellae.*
Pinselsaft—*Mel. rosat. c. boracc.*
Pionkörn—*Sem. paeoniae.*
Pissblumen—*Flor. stoechados.*
Pockensalbe — *Ungt. tartari stibiati.* (!)
Pockholz—*Lign. guajaei.*
Podagraspiritus—*Spir. angelic comp., Linim. saponis.*
Podenkullerpflaster—*Empl. cerussae.*
Pöden—*Rhiz. graminis.*
Pöschpulver—*Lycopodium.*

Polei—*Herb. pulegii (Menth. cr.)*
" gelber—*Lycopodium.*
Polychrestsalz—*Tart. natronat.*
Pomade, graue—*Ungt. hydrarg. cin. dil.*
Pomeranzen (unreife)—*Fruct. aurant. immaturi.*
Pomeranzenblätter, -blüthen, -tinktur—*Fol., Flor., Tinct. aurantii.*
Populeumsalbe—*Ungt. populi.*
Porsch, Porst, Post—*Herb. ledi palustris.*
Portchaisenpflaster—*Empl. oxycroceum.*
Postpflaster—*Empl. fuscum.*
Potagenwurzel—*Rad. alcannae.*
Potasche—*Kali carbonic. crud.*
Potessalbe—*Ungt. hydr. rubr.*
Präcipitatsalbe, rothe—*Ungt. hydr. rubr.*
" weisse—*Ungt. hydr. alb.*
Preisselbeere—*Fruct. vitis idaei.*
" schwarze—*Fruct. myrtilli.*
Preisselbeerkraut—*Fol. vitis idaci (Fol. uvae ursi.)*
Pressschwamm—*Spongia compressa.*
Preussenthee—*Herb. galeopsid, grandiflor.*
Preussisches Brustpulver—*Pulv. liquir. comp.*
Principalsalbe, rothe—*Ungt. hydr. rubr.*
" weisse—*Ungt. hydr. alb.*
Principitat, Prinzdeputat—*Ungt. hydr. rubr.*
Prinzsalbe—*Ungt. hydr. rubr.*
" weisse—*Ungt. hydr. alb.*
Probirsteine—*Succinum.*
Provencer Oel—*Ol. olivar.*
Prunelle—*Herb. prunellae (Herb. hederae.)*
Prunellensalz—*Kali nitric. tabulatum.*
Prunellenstein—*Kali nitric.*
Puder, gelbes—*Lycopodium.*
Puder, graues—*Pulv. pediculor., Fl. pyrethri pulv.*
" weisses—*Amylum.*
Pulver, blutreinigendes—*Pulv. laxans., Pulv. liquir. comp.*
" niederschlagendes—*Pulv. temperans.*
Purgiräpfel—*Colocynthides.*
Purgirbeeren—*Fruct. rhamni cath.*
Purgirblätter—*Fol. sennae.*
Purgirpulver—*Pulv. laxans.*
Purgirrinde—*Cort. frangulae.*
Purgirsalz—*Magnes. sulfurica.*
Purgirwurz—*Tub. jalapae.*
Pussade, weisse—*Aq. vulner, vinosa.*
" braune—*Mixt. vulner. acida.*
Pustelsalbe—*Ungt. tartari stib.*
Putzöl—*Acid. oleinicum.*
Putzpulver—*Calcar. praccipit.*
Putzwasser—*Acid. sulf. dilut.*

Quappenfett, Quappenöl—*(Ol. jccoris.)*
Queckenwurzel—*Rad. graminis.*
" rothe—*Rad. caricis.*
Quecksilber, zugerichtet—*Ungt. hydrarg. cin. dilut.*
Queddenkern—*Sem. cydonii.*
Quendel—*Herb. serpylli.*
Quendel, römischer—*Herb. thymi.*
Quercitron—*Lign. citrinum.*
Quinappel, Quintappel—*Colocynthides.*
Quinthangwasser—*Aq. aromatica.*
Quinttropfen—*Elix. ad long. vit.*
Quitschen—*Fruct. sorborum.*
Quittenappel—*(!) Fruct. colocynth.*
Quittenkerne—*Sem. cydoniae.*
Quittensaft—*(Sir. liquiritiae.)*
Quittenschleim—*Mucilago cydonii.*

Rabarber—*Rheum.*
Rabullerthee—*Flor. verbasci.*
Raddigbeeren—*Fruct. juniperi.*
Raddigholz—*Lign. "*
Räckholder—*Fruct. juniperi.*
Räffer—*Herb. tanaceti.*
Räuberessig, Räucheressig—*Acet. aromaticum.*
Räucherkerzen—*Candelae fumalis.*
Räucherpulver—*Species fumales.*

Ragwurzel—*Tuber salcp.*
Rahmbeeren—*Fruct. rubi fruticosi.*
Rainfarrn—*Tanacetum.*
Rainpel—*Herb. serpylli.*
Ramerian—*Flor. chamomillae.*
Rapontika—*Rad. rhapontici.*
Raritätensalbe—*Ungt. flavum.*
Rasenrübe—*Rad. bryoniae.*
Rattenpfeffer — *Sem. staph. agr.* (*Pulv. pediculor.*
Ramhöl—*Kreosot!*
Rauchsalbei—*Fol. salviae.*
Rauschgelb—*Auripigmentum.*
Raute—*Herb. rutae.*
Rautensamenpulver — (*Sem. cumini pulv.*)
Reckholderblumen—*Flor. sambuci.*
Reckholderbeeren—*Fruct. juniperi.*
Regenbogengeist—*Spir. serpylli.*
Regenwurmöl—*Ol. lini. p. 49, Ol. anim. foet p. 1.*
Regenwurmspiritus—(*Spir. cochlear.* oder *Spir. formicarum.*)
Reinaniswurzel—*Rad. hellebori* (!) *Pulv. pediculor.*
Reinbeeröl—*Ol. juniperi ligni.*
Reinigung, braune—*Mel. rosat.*, auch *Oxymel aeruginis* (!)
Reinigungsblätter—*Fol. uvae ursi, Fol. Sennae.*
Reinigungspillen—*Pil. laxantes.*
" grüne—*Ungt. populi, Ungt. ros-*
Reisendersalbe—*Ungt. populi, Ungt. rosmar comp.*
Reiserwurzel—*Rad. caricis.*
Reissmann'sche Salbe—*Ungt. hydrarg rubr.*
Reitersalbe—*Ungt. hydr. cin. dilut.*
Reiterseife—*Sapo viridis.*
Reizsalbe—*Ungt. cantharidum.*
Rekrutenpflaster—*Empl. oxycroceum.*
Renksalbe—*Ungt. popoli, Ungt. ros-*
Resinasöl—*Ol. ricini.* [*mar. comp.*
Rettigsaft—(*Spir. sinapis gtt. 1, Syr. simpl. 50, 0.*)
Rettigspiritus, Rettigtropfen } (*Spir. cochlear.*)
Reutersalbe—*Ungt. hydr. cin. dilut.*
Riewöl—*Ol. viride coct.*
Rhabarber—*Rheum.*
Rhabarberbeeren—*Fruct. berberidum.*
Rhaberbersaft—*Sir. rhei.*
Rhabarberwein—*Tinct. rhei vinos. Ph. Germ.*
Rheumatismusblätter—*Herb. tarax-*
Rhinozerosöl—*Ol. ricini.* [*aci.*
Ribiselsaft—*Sir. ribium.*
Riechessig—*Acct. aromatic.*
Riechsalz — *Ammon. carbonic. aromatis.*
Riechwasser—*Spir. odoratus* (auch *Liq. ammon. caust.*) (!)
Riedgras—*Rhiz. caricis.*
Riemerey—*Flor. chamomill. rom.*
Rigaer Balsam—*Tinct. benz. comp.*
Rindenthee—*Cort. frangulae.*
Rinderkugeln, Rinderlust } *Bolet. cervinus.*
Rindermark—*Medulla bovina.*
Rindsgalle—*Fel. tauri.*
Ringelblumen—*Flor. calendulae.*
Ringelkraut—*Herb. calendulae.*
Ringelrosen—*Flor. rhoeados.*
Ringelrosensaft—*Sir. rhoeados.*
Ringelsalbe, Ringelrosensalbe } (*Ungt. flavum.*)
Ringelwasser—(*Aq. sambuci.*)
Rinkenpflaster—*Empl. oxycroccum.*
Rippenkraut—*Herb. plantag.* (*Herb. millefolii.*)
Rittersalbe—*Ungt. pediculor., Ungt. hydrarg. cin. dil.*
Rittersporn—*Flor. calcartrippae.*
Rittersporнöl (*Ol.hyoscyami.*)
Rittersporнwasser (*Aq. melissae.*)
Rochustropfen—*Tinct. absinthii.*
Rockon—*Orleana.*
Röckerkätzchen—*Candelae fumales.*
Röhlk, Rölke } *Herb. millefolii.*
Röhrenkassie—*Cassia fistula.*
Röls—*Herb. millefolii.*
Römischer Alaun—*Alumen romanum.*

Römische Kamillen — *Flor. chamon. rom.*
Römischer Kümmel—*Fruct. cumini.*
Röstgummi—*Dextrin.*
Romai—*Flor. chamom. rom.*
Romaikenöl—*Ol. chamomillae coetum*
Romerai—*Flor. chamom. rom.*
Rosemari—*Fol. rosmarini.*
Rosenholz—*Lign. rhodii.*
Rosenhonig—*Mel. rosatum.*
Rosenlatwerge—*Electuar. e Senna.*
Rosenmilch—*Aq. rosae c. tinct. benzoes. 24:1.*
Rosenpappelblumen — *Flor. malvae arb.*
Rosenpflaster—*Empl. fuscum., Empl. cerussae.*
Rosenpulver—*Flor. rosarum. pulv.*
Rosensaft—*Mel. rosatum.*
Rosensalbe—*Ungt. rosat., Cold cream.*
Rosensamen—*Sem. cynosbati.*
Rosenschwämmchen—*Fungus cynos-*
Rosenstein—*Zinc. sulfurie.* (!) [*bati.*
Rosenstein'sche Augensalbe — *Ungt. zinci.*
" Kinderpulver—*Pulv. magnes. c. rheo.*
Rosenzucker—*Conserva rosarum.*
Rosinenpolaken, Rosinenpulver } *Tuber. jalap. pulv.*
Rosinensalbe—*Ungt. rosatum.*
Rosmarin—*Rosmarinus offic.*
Rosmariebutter, Rosmariesalbe } *Ungt. rosmarini comp.*
Rossaloë—(*Aloë.*)
Rossamselspiritus—*Spir. formicar.*
Rossessenz—*Tinct. aloes.*
Rossfenchel—*Fruct. phellandri.*
Rosshuf—*Farfara.*
Rosskümmel—*Fruct. cumini.*
Rosspulver—*Pulv. pro equis.*
Rossschwefel—*Sulfur. griseum.*
Rosswurzel—*Rad. carlinae.*
Rostpulver — *Oxalium. Acid. oxalic.* (!)
Rothe Kopfsalbe, Rothe Makari } *Ungt. hydrarg. rubr.*
Rothe Myrrh—*Myrrha.*
Rothe Wurzel—*Rad. alcannae.*
Rother Ernst—*Rad. gentianae.*
Rother Enzian—*Rad. gentianae.*
Rother Prinzipitat — *Ungt. hydrarg. rubrum.*
Rother Schwefel—*Cinnabaris.*
Rother Thee—*Flor rhoeados.*
Rothkelchenöl—*Ol. hyperiei.*
Rothlaufpflaster—*Empl. cerussae.*
Rothrindenthee—*Cort. rhamni frang.*
Rothwisplichöl—*Ol. hyperiei.*
Rottenwurzel—*Rad. valerian.*
Ruchelkörn — *Sem. cocculi,* (*Pulv. pediculor.*)
Rütersalv — *Ungt. pedieulor., Ungt. hydr. cin. dil.*
Ruhpulver—*Pulv. magnes. c. rheo.*
Ruhrblumen—*Flor. stoechados.*
Ruhrkraut—*Herb. mercurialis.*
Ruhröl—*Ol. hyoscyami coetum.*
Ruhrrinde—*Cort. simarubae.* (*Cort. casearillae.*)
Ruhrwurzel—*Rad. tormentillae.*
Ruhsaft—*Sir. papaveris.*
Ruhtropfen—*Tinct. valerian. aetherea*
Russenöl—*Ol. rusci.*
Russenpulver—*Pulv. insectorum.*
Russessenz—*Tinct. fuliginis.*
Russisch. Balsam—*Tinct. benzoe comp.*
Russisch Pflaster—*Empl. fuscum.*
Russöl—*Kreosot.*
Rutenöl—(*Ol. jecoris.*)
Ruthmachgall—*Crocus.*
Rutschpulver—*Talcum.*
Saat=Samen.
Sabadill—*Sem. sabadillae* (*Pulv. pediculor., Flor. pyrethi rosei pulv.*)
Sachsenfrass—*Cort. sassafras.*
Sack pack di—*Pulv. pedieulorum.*
Sadebaum—*Herb. sabinae.* (!)
Säben Deils-Pulver—*Pulv. equor. gris.*
Säftchen gegen Schwämme — *Mel. boraxat.*
Säupulver—*Stibium sulf. nigr.*
Säwersatt, Säwkenpulver } *Flor. cinae pulv.*

Safflor—*Flor. carthami.*
Safran—*Crocus.*
Saffranpflaster—*Empl. oxycroceum.*
Saffranspiritus—*Spir. camph. 12 p. tinct. croci. 1 p.*
Saftgrün—*Succ. viridis.*
Sagebaum—*Herb. sabinae.* (!)
Saidschützer Salz—*Magnesia sulfurica.*
Sanct Germaniathee / Saint Germainthee } *Spec. laxantes.*
Salbe, Aegyptische—*Oxymel aeruginis*
" alte Schadenaustrocknende—*Ungt. exsiccans s. calaminar. s. zinci.*
" blaue—*Ungt. hydrarg. cin.*
" braune—*Empl. fuscum.*
" durchdringende—*Ungt. rosmar. comp.*
" flüchtige—*Linimcnt. ammoniat.*
" französische — *Ungt. hydrarg. citrin.*
" graue—*Ungt. hydrarg. cin.*
" hebräische—*Ungt. diachylon.*
" kühlende—*Ungt. plumbi.*
" neapolitaner—*Ungt. hdrarg.cin.*
" scharfe—*Ungt. cantharid.* [*dil.*
" schwarze—*Ungt. pediculorum.*
" zertheilende—*Ungt. hydr. cin., Ungt. kalii jod.*
Salbenblätter / Salfere } *Fol. salviae.*
Salbei—*Fol. salviae.*
Salep—*Tuber salep. pulv.*
Saliter—*Kali nitric.*
Salmiak—*Ammon. muriaticum.*
Salmiak, flüchtiger / Salmiakgeist } *Liq. ammonii caust.*
" blauer—*Aq. (Spir.) cocrulea.*
Salmiakspiritus—*Liq.ammonii caust-icus.*
Salomonssiegel—*Rhizoma polygonat., Rhiz. ari.*
Salomontropfen—*Ol. tercb. sulfuratum.*
Salpeteräther / Salpetergeist / " versüsster } *Spir. acth. nitrosi.*
Salpeterkügelchen — *Nitrum tabulatum.*
Salpeternaphta—*Spir. acth. nitrosi.*
Salpetersäure—*Acid. nitricum.*
Saltartri—*Kal. carbon.*
Salv=Salbe.
Salverer—*Fol. salviae.*
Salvolate—*Liquor ammon. anisatus., ammon. carbon.*
Salvolatspiritus—*Liq. ammon. causticus.* (!)
Salz, flüchtiges—*Ammon. carbonicum.*
Salzäther—*Spir. muriat. aeth.*
Salzburger Tropfen — *Tinct. aloes comp.*
Salzgeist—*Acid. muriaticum.* (!)
" versüsster—*Spir. muriatico-aethereus.*
Salzschaff—*Pulv. equorum.*
Salzspiritus—*Acid. muriaticum* (!), auch *Spirit. muriat. aeth.*
Salzunger Tropfen—*Elix. ad long. vit.*
Samaritergeist—*Spir. melissae comp.*
" pflaster—*Empl. fuscum.*
Sanct Georgstropfen—*Ol. tereb. sulfurat.*
Sanct Germainthee—*Spec. laxantes.*
Sanctumholz—*Lign. guajaci.*
Sandbeerblätter—*Fol. uvae ursi.*
Sandblatt—*Fol. farfarae.*
Sandelholz, rothes—*Lign. santalinum*
Sandkraut—*Fol. farfarae.*
Sandrach—*Sandaraca.*
Sandriedgraswurzel / Sandseggewurzel } *Rhiz. caricis.*
Sandruhrblumen / Sandstrohblumen } *Flor. stoechados.*
Sanickelkraut—*Herb. sanieulae.*
Sanickelsalbe—*Ungt. basilicum.*
Sass und frass—*Cort. sassafras.*
Sassafrassnüsse—*Sem. pichurim.*
Satureikraut—*Herb. saturcjae.*
Saturnsalbe—*Ungt. plumbi.*
Säuer, Hallersche / Sauer, Hallersches } *Mixt. sulfur. acida.*
Sauerbeersaft—*Sir. berberidis.*
Sauerhonig—*Oxymel simplex.*

Sauerklcesalz — *Oxalium,* (!) *Acid. oxalic.* (!)

Sauerkohl Nashorn—*Natr. bicarbonicum.*

Sauerpulver—*Tartar. depuratus.*

Saunickel—*Herb. saniculae.*

Saure Tropfen, rothe—*Tinct. aromat. acid.*

Saure Tropfen, Saure Zahntropfen } *Mixtura sulf. acida.*

Saure Nerventropfen—*Aether. aceticus, Tinct. aromat. acida.*

Sautanne—*Herb. Lycopodii.*

Schabockumgewandt, Schabberisalbe, Schabrian, umgewandten } *Ungt. contra scabiem.*

Schaber oder Schoberthee—*Flor.* oder *Herb. millefolii.*

Schabrell—*Cort. cascarillae.*

Schachtelhalm—*Herb. equiseti.*

Schackerill, Schackerillenbark } *Cort. cascarillae.*

Schadenpflaster—*Empl. fuscum.*

Schadensalbe, alte—*Ungt. zinci.*

Schäferbalsam—*Liq. ammon. anisati.*

Schäferkraut—*Herba bursi pastoris.*

Schäferpflaster—*Empl. fuscum.*

Schäfersalbe — *Ungt. simpl., Empl. fuscum.*

Schäfertropfen—*Tinct. aromatica.*

Schärfkräutig—*Herb. sideritidis.*

Schafennigwurz—*Rad. hellebori alb.* (!)

Schafgarbe, Schafrippchen } *Herb. millefolii.*

Schafsmullensaat—*Fruct. phellandrii*

Schakrill—*Cort. cascarillae.*

Schampionkraut, Schapshosen } *Herb. scabiosae.*

Schappsalbe—*Ungt. contra scabiem.*

Scharbockskraut—*Herb. arnicae, Herb. cochleariae.*

Scharbockssalbe—*Ungt. contra scabiem.*

Scharbockstropfen — *Tinct. chinae comp.*

Scharfe Salbe—*Ungt. cantharid. veterinar.*

Scharfrichterpflaster—*Empl. fuscum.*

Scharfrichtersalbe — *Ungt. populi, Ungt. contra scab., Ungt. basilicum.*

Scharlachkörner—*Grana kermes.*

Scharlakenpulver—*Tub. jalapae pulv.*

Scharlei—(*Herb. salviae.*)

Scharlottenpulver—*Tub. jalapae pulv.*

Scharnikel—*Herb. saniculae.*

Scharpiesalbe—*Ungt. basilicum.*

Scharpionöl—(*Ol. olivar., Ol. adipis.*)

Scharte—*Herb. serratulae, Herb. genistae.*

Schascharellenbork—*Cort. cascarillae*

Schauerbalsam—*Ungt. rosmar. comp.*

Scheefennigensaat — *Sem. staphid. agriae* (*Rad. hellebori albi* [*nigri*] *pulv., Pulv. pedicolorum, Flor. pyrethri rosei pulv.*).

Scheidewasser—*Acid. nitricum* (!)

Schellac—*Lacca in tabulis.*

Schellkraut—*Herb. chelidonii.*

Scherbenkobalt—*Cobaltum.* (!)

Scherkraut—*Herb. sideritidis, Herb. serratulae.*

Scherzensalbe—*Ungt. hydrarg. citrini*

Schickerill—*Cort. cascarillae.*

Schiffspech—*Pix navalis.*

Schindkraut—*Herb. chelidonii.*

Schirmenthee—*Spec. laxantes.*

Schiwicken—*Flor. sambuci.*

Schlafäpfelthee, Schlafthee } *Fruct. papaveris contus.*

Schlafsaft—*Sir. papaveris.*

Schlagtropfen, rothe — *Tinct. valerianae.*

" weisse—*Spir. aethereus.*

Schlagwasser — *Spir. angelic. comp., Aq. aromatica,* auch *Aq. vulnerar. acid.*

Schlangenfett, Schlangenöl } (*Ol. jecoris.*)

Schlangenholz—*Lignum guajaci.*

Schlangenmoos—*Herb. lycopodii.*

Schlangenmehl, Schlangenpulver } *Lycopodium.*

Schlangenwurz—*Rad. serpentariae.*
Schlegelthee—*Spec. laxantes.*
Schlehblüthen } *Flor. pruni*
Schlehdornblüthe } *spinosae.*
Schlehensaft—(*Sir. berberidis*).
Schleimkörner—*Sem. cydoniae.*
Schleimkreim—*Creta alba.*
Schleimthee—(*Rad. althaeae*).
Schleppchenpulver—*Rad. salep. pulv.*
Schlingeblüthe—*Flor. acaciae.*
Schlüsselblume—*Flor. primulae* (*Flor. verbasci*).
Schlupfpulver—*Talcum pulv.*
Schmalwurz—*Rad. consolidae.*
Schmale Salve—*Fol. salviae.*
Schmandsalbe—*Cerat. cetacei, U.S.P.*
Schmeckelswasser—*Spir. odoratus.*
Schmerzstillender Liquor—*Spir. aethereus.*
" -Spiritus — *Spir. angelicae*
Schmierseife—*Sapo viridis.* [*comp.*
Schminkwurzel—*Rad. alcannae.*
Schmirgel—*Lapis smiridis.*
Schmolt—*Adeps.* [(!)
Schnakengeist — *Liq. ammon. caust.*
Schnakenpulver—*Pulv. insectorum.*
Schnallenblüthe—*Flor. rhoeados.*
Schnalzensaft—*Sir. rhoeados.*
Schneckenhauspulver—*Conchae praepar.*
Schneckenfett } *Ol. lumbricor.,*
Schneckenöl } *Ol. jecoris.*
Schneckenöl, schwarzes—*Ol. philosoph.*
Schneckensaft — *Sir. althaeae, Sir. liquirit.*
Schneckensalbe—*Ungt. plumbi.*
" schwarze — *Empl. fuscum.*
Schneeberger Schnupftabak — *Pulv. sternutatorius albus, vel viridis.*
Schneesalbe—*Ungt. rosat., Ungt. zinci.*
Schneiderleistenspiritus — *Spir. lavandul. comp.*
Schnellerblumen—*Flor. rhoeados.*
Schnelltropfen—*Tinct. jalapae.*
Schnitzelrothstein—*Lap. haematitis.*
Schnupfpulver, Schneeberger — *Pulv. sternutatorius albus vel viridis.*
Schobbijack, weisser—*Ungt. hydrarg. [albi.*
Schöllkraut—*Herb. chelidonii.*
Schönheitspflaster—*Empl. anglicum.*
Schokoladenpflaster } *Empl. fuscum.*
Scholzensalbe }
Schorfkopfsalbe—*Ungt. basilicum.*
Schotenklee—*Herb. melioti.*
Schotenpfeffer—*Piper hispanicum.*
Schreckkörner—*Sem. paeoniae.*
Schreckkraut—*Herb. conyzae, Herb. centaurii.*
Schreckpulver—*Pulv. temperans.*
Schrecktropfen, rothe — *Mixt. oleoso balsamica. Ph. G.*
" weisse—*Spir. aethereus.*
Schreckwasser—*Aq. aromatica.*
Schubjack—*Ungt. contra scabiem.*
Schuppenflechte—*Lich. islandic.*
Schüssersalbe—*Ungt. sulfuratum.*
Schusswasser—*Mixt. vulnerar. acid.* oder *Aq. vulnerar. vin.*
Schutzpflaster, grünes—*Empl. meliloti*
Schwabentodt—*Borax pulv.*
Schwämmchensaft — *Mel. rosat. c. borace.*
Schwärzpflaster—*Empl. plumbi comp.*
Schwalbenöl — *Ol. philosophor., Ol. viride coct., Ol. adipis.*
Schwalbenwasser—*Aq. aromatica, Aq. flor. tiliae.*
Schwalbenwurzel—*Rad. vincetoxici.*
Schwammkohle—*Spongia usta.*
Schwanensalz—*Tartar. natronat.*
Schwarten Peperkähm—*Sem. nigellae*
Schwarzbeeren—*Fruct. myrtilli.*
Schwarzbreitenpflaster — *Empl. fuscum.*
Schwarzdornbeerbrei—*Succ. sambuci.*
Schwarzdornblüthen—*Flor. acaciae.*
Schwarze Mundertropfen—*Tinct. ferri*
" Nüsse—*Myrobalani.* [*pom.*
" Seife—*Sapo viridis.*
" Tafelsalbe—*Empl. fuscum.*
" Wundertropfen — *Elix. ad long vit.*

Schwarzer Degen—*Ol. rusci, Ol. animal. foet.*
" Kümmel—*Sem. nigellae.*
" Senf—*Sem. sinapis.*
" Uran—*Styrax calamita.*
Schwarz Heilpflaster—*Empl. fuscum.*
Schwarz Kirschenwasser—*Aq. amygdal. am. dil.*
Schwarzlosenpulver—*Pulv. equorum.*
Schwarz Steinöl—*Ol. animale foetid.*
Schwarztaffetpflaster—*Empl. drouotti.*
Schwarzwäldertropfen—*Elix. ad long. vit.*
Schwarzwurzel—*Rad. consolidae, Rad. symphyti.*
Schwarzwurzelsaft—*Sir. althaeae.*
Schwarzwurzelsalbe — *Ungt. basil., Empl. fuscum.*
Schwedentrank } *Elix. ad*
Schwedisch Lebenselixir } *long. vit.*
Schwedische Tropfen — *Elix. c succo liquir.*
Schwefeläthergeist—*Spir. aethereus.*
Schwefelalkohol—*Carboneum sulfurat.*
Schwefelbalsam—*Ol. lini. sulf.* (meist *Ol. tereb. sulf.*)
Schwefelblumen—*Sulf. sublimatum.*
Schwefelleber—*Kalium sulfuratum.*
Schwefelmehl — *Lycopodium, Sulfur. dep.*
Schwefelmilch — *Sulfur. praecipitatum.*
Schwefelnaphta—*Aether sulfuric.*
Schwefelöl—*Ol. terebinth. sulfurat.*
Schwefelsalbe—*Ungt. sulfuratum.*
Schwefelspiesglanz — *Stib. sulfur.*
Schwefelstät—*Aether.* [*crud.*
Schweinefrass—*Cort. sassafrass.*
Schweisspulver—*Talcum sylicylatum.*
" zum Metallhärten — *Ferrocyankalium.*
Schweizerthee—*Herb. galeopsidis grandiflor.*
Schwerenothtropfen—*Tinct. chinioidini.*
Schwertelwurzel—*Rhiz. iridis.*
" wilde—*Rad. victorial.*, auch *Rad. pyrethr.*
Schwersaat—*Flor. cinae.*
Schwiensbulenpflaster—*Empl. plumbi. comp.*
Schwienwörtel — *Rad. hellebori albi* (?)
Schwindelkörner—*Cubebae*, auch *Sem. cocculi.* (!)
Schwindelöl—*Ol. terebinthinae.*
Schwindelpulver—*Pulv. temperans.*
Schwitzthee—*Flor. sambuci.*
Schwitztropfen, weisse — *Spir. angel. cp., Liq. ammon. acet.*
Schwülkenöl—*Ol. philosoph., Ol. coct. viride.*
Schwülkenwasser — *Aq. aromatic.*, (*Aq. foeniculi*).
Schwundsalbe—*Ungt. zinci.*
Schwungsalbe—*Ungt. populi.*
Scorbuttinktur—*Tinct. ligni guagaei.*
Scordion—*Herb. scordii.*
Scorpionöl—(*Ol. hyperici, Ol. jecoris*)
Scorpionpulver—*Lap. smiridis.*
Sebarsaat—*Flor. cinae.*
Sechswöchnerinthee—*Herb. violae tricol.*
Seckelkraut—*Herb. bursae pastoris.*
Sedativsalz—*Acid. boracic.* (?) *Natr. bicarbon.*
Sedlitzer Salz — *Magnesia sulfurica., Seidlitz pulver.*
Seejungferfett—*Ol. jecoris.*
Seeperlenpulver (Seeperlen) — *Con-*
Seelenspeck—*Cetaceum.* [*chae praep.*
Seemoos—*Caragaheen.*
Seep—*Sapo.*
Seesalz—*Sal marine.*
Seeschaum—*Ossa sepiae pulv.*
Sehnsblätter—*Fol. sennae.*
Sehnenöl—*Ol. camphoratum.*
Sehnentrecksalv—*Ungt. populi.*
Sehnenziehöl—*Ol. philosophorum.*
Seichdiakel—*Empl. plumbi.*
Seidelbast—*Cort. Mezerei.*

Seidenrosenthee—*Flor. malvae arbor.*
Seidlitzer Salz } *Magnesia*
Seidschützer Salz } *sulfurica.*
Seife, grüne } *Sapo viridis.*
" schwarze }
Seife, Alikantische } *Sapo*
" Spanische } *Hispanicus.*
" Venetische } *(Castil.)*
Seifengeist — *Spir. saponatus, Lin. saponis.*
Seifenkraut—*Herb. saponariae.*
Seifenpflaster—*Empl. saponatum. Ph.*
Seifenrinde—*Cort. quillajae.* [*G.*
Seifenspiritus—*Spir. saponat., Linim. saponis.*
Seifenstein — *Natr. causticum* (!), *Talcum pulv.*
Seifenwurzel—*Rad. saponariae.*
Seigamselspiritus—*Spir. formicarum.*
Seignettesalz—*Tart. natronatus.*
Seilerschmiere—*Tinct. arnicae.*
Sektenpulver — *Flor. pyrethri ros. pulv.*
Sellerieöl, braunes — *Ol. philosophorum.*
Sellerie-Pomade } *Ungt. hydrarg. album,*
Sellerie-Salbe } *Ungt. zinci.*
Sellerietropfen—*Spir petroselini.*
Selleriewurzel—(*Rad. petroselini*).
Semensblätter—*Fol. sennae.*
Senfblätter—*Fol. sennae.*
Senfmehl—*Sem. sinapis pulv.*
Senföl—(*Spir. sinapis*).
Senfpflaster—*Charta sinapisata.*
Senfspiritus—*Spirit. sinapis.*
Senfteig—*Sinapismus.*
Sengenesselthee—*Flor. lamii albi.*
Sennesbälge—*Folliculi sennae.*
Sennesblätter—*Fol. sennae.*
Sensmus (Sennesmus)—*Elect.e senna.*
Serbel-Saat, -Samen—*Flor. cinae.*
Sevebaum—*Herb. sabinae.*
Sibyllentropfen—*Tinct. chinioidini.*
Siddensalv—*Ungt. plumbi.*
Siedenbaum—*Herb. sabinae.*
Siebenerleischmiere—*Ungt. rosmarini comp.*
Siebenstundenkraut—*Herb. fumariae.*
Siebenzeitkraut—(*Herb. meliloti*).
Siebenzeitsamen—*Sem. foenu graeci.*
Siebenundsiebzigerlei Tropfen—*Tinct.*
Siegelerde—(*Bolus*). [*chinioidini.*
Siegelwurz—*Rhiz. polygoni.*
Siegmarskraut—*Herb. malvae.*
Siegmarswurzel } *Rad. victorial.*
Siegwarwurzel } *long. (—rot.)*
Siegwurzel }
Silberbalsam—*Ol. terebint. sulfurati.*
Silberglätte—*Lithargyrum.*
Silberglättessig—*Acetum plumbi.*
Silberglättpflaster — *Empl. plumbi simpl.*
Silberglättsalbe—*Ungt. plumbi, Ungt. cerussae, Ungt. diachylon.*
Silberglücksalbe—*Ungt. plumbi.*
Silberkrautthee—*Herb. hederae.*
Silbertropfen (für's Fieber—*Tinct. chinae comp.*
Silbertropfen—*Ol. terebint. sulfurati.*
Simplexpflaster—*Empl. plumbi, simpl.*
Simplextinktur—*Tinct. arnicae.*
Sinabork—*Cort. chinae.*
Sinau—*Herb. alchemillae.*
Simngrün—*Herb. vincae.*
Skorpionöl—*Ol. chamomillae coct., Ol.* [*lini.*
Smack—*Rhus glabra.*
Soda } *Natr. carbon. crud.*
Sodasalz } *Natr. bicarb.*
Sodbrod—*Siliqua dulcis.*
Sögöl—*Ol. foeniculi.*
Soldatenholz—*Lign. guajaci.*
Soldatensalbe—*Ungt. pediculorum.*
Soldatenthon—*Talcum pulv.*
Soldatentropfen—*Tinct. chinioidini.*
Sommerstaub—*Pulv. pediculor., Flor. pyrethri ros. pulv.*
Sonnenblumen—*Flor. calendulae.*
Sonnengold—*Flor. stoechados.*
Sonnenkäfer—*Coccionella.*
Sonnenrosen—(*Flor. calendulae.*)
Sonnenthau—*Herb. rorellae.*
Sophie, schmale—*Fol. salviae.*
Sophiensaft—*Mel. boraxatum.*

# MONTHLY REVIEW.

## Chemistry.

**The Estimation of Iodoform in Presence of Organic Matter.** — According to G. Meillère, the substance is weighed into a flask and treated with 25 cc. nitric acid, free from chlorine, and a slight excess of dry silver nitrate (for 1 gm. iodoform use 1.75 gm. silver nitrate) and the flask connected with a potash bulb filled with solution of silver nitrate. The liquid is now heated, just short of boiling, for 10 minutes and then the temperature increased until the iodoform is decomposed. When nitrous fumes are no longer evolved, enough water to make about 150 cc. is added and the liquid heated until the precipitate subsides and leaves a clear liquid above. The silver iodide is then collected, dried at 160° and weighed. Should the silver solution in the potash bulb be turbid, this ppt. must also be collected and its weight added to the main portion.

[Ann. Chim. analyt. (5), 3, p. 153; from Ztschf. f. anal. Chem., 38, p. 674.] *W. A. P.*

**The Volumetric Estimation of Gold and Platinum.** — H. Peterson proposes a new volumetric estimation of gold and platinum. The method resembles the iodometric method of de Haen and is based upon the following reactions:

1. a) $PtCl_4 + 4KI = PtI_2 + I_2 + 4KCl$, b) $I_2 + 2Na_2S_2O_3 = 2NaI + Na_4S_4O_6$.
2. a) $AuCl_3 + 3KI = AuI + 2I + 3KCl$, b) $AuI + Na_2S_2O_3 = NaI + NaAuS_2O_3$,
   b) $I_2 + 2Na_2S_2O_3 = 2NaI + Na_2S_4O_6$.

In the estimation of Pt in potassium platino-chloride the salt is treated with a fairly concentrated cold solution of potassium iodide and then, without adding starch, volumetric sodium thiosulphate added until the reddish-brown color of the liberated iodine is replaced by a pure lemon-yellow.

The estimation of gold is carried out in the same way except that here starch is employed as indicator. Owing to the formation of $NaAuS_2O_3$, which corresponds in structure to sodium-silver thiosulphate formed when silver halides are dissolved in thiosulphates, three molecules of thiosulphate are equivalent to one atom of gold.

[Ztschft. f. anorg. Chem., 19, p. 59; from Ztschft. anal. Chem., 38, p. 653.] *W. A. P.*

**Test for Nicotine.**—Formaldehyde is employed by J. Schindelmeiser for the detection of small quantities of nicotine, where coniine has been proven to be absent by means of microchemical tests. Both being hard to determine because of color reactions. The solution containing nicotine is treated with several drops of 30 p. c. solution of formaldehyde (free from acid) and then a drop of concentrated sulphuric acid added, an intense rose

red color is developed. The reaction is sensitive to 0.0005 p. c. solution of nicotine. Where concentrated nicotine solutions are used dark red color developes, and with resinified nicotine, blood red. The color is lasting and more prominent after allowing the solutions to stand about an hour. The solution should not be evaporated on a water bath, nor should an excess of formaldehyde be used. Formic and acetic acids, and acetaldehyde were not found as sensitive as formaldehyde.

[Pharm. Centrlbl., 40, p. 703.] *W. O. R.*

**Estimation of Free and Combined Formaldehyde.**—G. H. A. Clowes and B. Tollens have worked upon the estimation of formaldehyde and give the following process as yielding accurate results. The substance to be analyzed is mixed with 5 cc. of water, and then 15 cc. each of hydrochloric acid, sp.g. 1.19, and water, and an excess of phloroglucin and heated to 70°—80° C. on a water bath during 2 hours. The separated phloroglucide is removed by filtration, and the filtrate is heated with sulphuric acid and heated again in order to insure the completion of the reaction. The precipitate is washed on an asbestos filter, with water, dried at 95°—98° C. and weighed in a closed receptacle. (135 pt. phloroglucide represent 30 p. c. formaldehyde.)

[Ber. d. d. Chem. Ges., 32, p. 2841.] *W. O. R.*

**Ethyl Nitrite Determination.**—R. C. Cowley and J. B. Catford propose to do away with nitrometers in the estimation of ethyl nitrite or its solutions. A modification of a colorimetric test for nitrites in water is used. Color is developed in the ethyl nitrite solution and in sodium nitrite solution of known strength, by means of meta-phenylene-diamine (2 gr. to 1 oz. of water) and sulphuric acid (1 vol. to 2 vol. water) solutions. The intensity of the color is compared and the strength of the ethyl nitrite calculated.

[Pharm. Jour., 63., p. 471.] *W. O. R.*

**Potassium Chromate as a Milk-Preservative.**—Alex. Leys claims that besides formaldehyde, potassium chromate is employed as a preservative for milk. It is used in minute amounts only and can not always be detected by its color. To detect it the author evaporates 100–150 cc. of milk, incinerates the residue and obtains a slightly colored ash, yielding a yellowish red solution with sulphuric acid if chromates were contained in the milk. Vapors of $CrO_2Cl_2$ are also noticed, and are due to the action of the chromic acid upon sodium chloride of the milk. The ash of a milk containing chromates, if treated with water yields a yellow filtrate in which chromium salts may be demonstrated by the formation of perchromic acid with hydrogen peroxide and by other tests. [J. Pharm. Chim., [6], 10, p. 337; from Chem. Centralb. 70, 2, p. 975.] *W. A. P.*

**The Volumetric Estimation of Sulphuric Acid and Sulphates.**—Franz Litterscheid and Karl Feist base a method of estimating sulphuric acid

upon the precipitation of sulphuric acid with barium chloride and the determination of the excess of barium as barium carbonate by titration with acid. Other acids which might precipitate with barium, such as phosphoric and oxalic acid must be absent or else removed. This also applies to citric and tartaric acid which would prevent the complete precipitation of barium. The sulphate solution corresponding to these requirements is rendered acid with hydrochloric acid heated to boiling and treated with an excess of barium chloride-solution (30.5 gm. in 1000 cc.) After digesting on the water-bath for thirty minutes, the liquid is rendered strongly alkaline with ammonia water, and then treated with enough ammonium carbonate to precipitate all barium and kept at a temperature of 50—60° C. for 10 minutes. The precipitate, consisting of barium sulphate and barium carbonate, is collected, washed and then titrated with decinormal hydrochloric acid. The sulphates directly determinable by this method are those of K, Na, $NH_4$, Rb, Cs, Li, (precaution: use sufficient water to keep $Li_2CO_3$ in solution), Cu, Zn, Cd, Ni and Co. Ferrous salts must first be oxidized and then freed from iron by ammonia. [Arch. d. Pharm., 237, p. 521.] *W. A. P.*

**A Comparison of the Bactericidal Action and the Toxicity of the Three Isomeric Cresols and Phenols.**—Hans Hammerl has compared o-cresol and p-cresol with phenol and finds that in equally strong solutions they are far more efficient disinfectants than phenol. This is especially the case if the bacteria are in a strongly albuminous solution. One percent solutions of o-cresol and p-cresol destroyed vegetative forms within one minute with certainty. m-Cresol was not studied as this is too insoluble to be of use. While the bactericidal property of o- and p-cresol is equal, the para form is more poisonous. Phenol, in equally strong solutions is less actively disinfectant, but has proven to be also less poisonous. [Hygien. Rdsch. 9, p. 1017; from Chem. Centrlbl. 70, 2, p. 969.] *W. A. P.*

**Peru-balsam Oil.**—The fragrant, liquid constituent of balsam of Peru, the so-called Peru-balsam oil, or cinnameïn, of which the composition appeared to have been determined beyond doubt, has again been investigated by H. Thoms,* who found several substances which had hitherto been overlooked. Apart from the already known constituents, vanillin and the benzoic- and cinnamic-acid esters of benzyl-alcohol, a new substance, peruviol, was isolated, though only in a small quantity. Peruviol is an agreeable, honeylike smelling alcohol, with an odor resembling narcissus, answering to the formula $C_{13}H_{22}O$, boiling at a pressure of 7 mm., at 139° to 140°, and having a specific gravity of 0.886 at 17.5°. Optically it is active $\alpha_D = +13°$; like benzyl-alcohol, it occurs in balsam of Peru as an ester. The action of cinnamyl-chloride on peruviol produced a small

* Ueber Cinnameïn oder Perubalsam-Oel, Archiv d. Pharm., 237, p. 271.

quantity of a crystalline ester, of a hyacinth odor; oxidation with a cold alkaline solution of permanganate of potassium yielded a mixture of the lower fatty acids. Cinnamic alcohol, which, according to an earlier statement, should be present in Peru-balsam oil, was not found. The acid mixture, resulting from the saponification of cinnameïn with cold alcoholic potash-solution, contained cinnamic and benzoic acids, in proportion of 40 to 60, and also an acid melting at 79° to 80°, probably a dihydrobenzoic acid. [S. & Co's Semi-Annual Report, Oct. '99, p. 49.] *E. K.*

**Opopanax Oil.**—The drug, which is nowadays on the market under the name of opopanax, is almost certainly derived from *Balsomodendron Kafal* Kunth, a plant of the N. O. *Burseraceæ*. S. & Co.'s opopanax oil is manufactured from that material. The true opopanax from the N. O. *Umbelliferæ* is difficult to obtain, and is derived, as is generally accepted, from *Opoponax Chironium* Koch (*Ferula Opoponax* L.). A chemical examination of undoubtedly genuine opopanax from the N. O. *Umbelliferæ* has recently been made by A. Knitl,[1] in A. Tschirch's laboratory in Berne. On this occasion also, the essential oil was separated by shaking the alcoholic resin solution with petroleum ether. By treatment with bisulphite solution, a brown grease was isolated from the oil which, by sublimation between watch-glasses, produced white, odorless needles, having a melting point of 133° to 134°. This substance, which on combustion gave figures corresponding to the formula $C_{20}H_{10}O_7$, and provisionally received the name of "oponal", could not be investigated further, owing to lack of material. The oil itself, when fractionated under reduced pressure, yielded first a colorless distillate, with an odor reminding of lovage, and afterwards a blue-colored portion. In the neck of the retort, crystals of "oponal" separated out. [S. & Co.'s Rep., Oct. '99, p. 41.] *E. K.*

**Nigella Oil.** — Damascenine, the alkaloid obtained from the seed of *Nigella damascena* L. by A. Schneider,[2] has recently been examined by H. Pommerehne.[3] The seed, from which the damascenine was obtained, was, in the undivided state, lixiviated with diluted hydrochloric acid, the acid solution supersaturated with soda, and the alkaloid extracted with petroleum ether. From the petroleum ether, the hydrochloric compound of the base could be obtained pure by shaking with hydrochloric acid. 18 kilos of seed, treated in this manner, yilded 110 gm. of hydrochloric acid salt.

Analysis of the double salt of platinum (also already obtained by Schneider) gave values which answer to the formula $(C_{10}H_{15}NO_3HCl)_2PtCl_4$. With chloride of gold, damascenine forms an easily decomposable gold salt. The platinum salt contains about 14 p. c. $OCH_3$.

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[1] Ueber das Umbelliferen-Opopanax. Archiv d. Pharm. 237, p. 256.
[2] Pharm. Centralh., 31, p. 173 and 191.
[3] Archiv d. Pharm. 237, p. 475.

The fact that the vegetable base isolated from neroli oil proved to be the methylester of an aromatic amido-acid, induced S. & Co. also to investigate the constitution of damascenine in this direction. Their researches, although begun more than two years ago, have been pushed into the background by other work, but the results which they have so far obtained, may be briefly narrated here:—

The damascenine used was obtained from nigella oil by extraction with tartaric acid, and decomposition of the tartrate with soda. This process yielded 9 p. c. of crude damascenine. The bulk of the base, passed over under fractional distillation at 10 mm. pressure at 157°, showed a beautiful blue fluorescence and congealed at ordinary temperature. In order to discover whether the base was an ester, like that of neroli oil, it was boiled with alcoholic potash.

1.11 gm. of this fraction required 0.308 gm. KOH, corresponding to a saponification number = 277.4. This result encouraged experiment on a larger scale, carried out by boiling 10 gm. of damascenine with 4 gm. KOH in alcoholic solution for some hours. After distilling off the alcohol by means of steam from the saponification-product, the last-named is agitated with ether. The alcoholic distillate and the ethereal extract yielded, after evaporation of the solvents, a slight residue of oil, with an odor of damascenine. After adding acetic acid to the alkaline solution freed from oil, there was obtained from it, by means of ether, a substance which, in solution, showed a beautiful fluorescence. Upon evaporation of the ether, this body was deposited in bright prismatic crystals. It is probably an amido-acid, and its further examination will shed light upon the constitution of damascenine. It is readily soluble in water, and with platinum-chloride it yielded a double salt, slightly soluble.

They also confirm the presence of methoxy groups.

[S. & Co.'s Rep., Oct. '99, p. 38.] *E. K.*

**Oil of Dacryodes Hexandra.**—*Dacryodes hexandra* Griseb.,* N. O. *Burseraceæ* is a native of Dominica, Martinique, and Porto Rico. It yields a liberal proportion of resin, which is collected from the living trees and is largely used in varnish-making. In its crude state, this resin forms a very tough, white mass of powerful aromatic odor, yielding, according to Mr. More, when distilled by steam, about 16 percent of a highly volatile oil. Under fractional distillation, the oil passed over between 156° and 160°, leaving about 12 to 13 percent of residue. In the fraction having the lowest boiling point, pinene (in its lævogyre modification) was detected; the fraction 173° to 176°, when saturated with anhydrous hydrochloric acid, yielded a hydrochloride crystallizing out at — 10° (melting point 71°), pointing to the presence of sylvestrene. The fraction, from which the hy-

* Or, according to Engler, *Pachylobus hexandrus* Griseb.

drochloride was prepared, was strongly lævogyre, which would indicate the detection, for the first time, of l-sylvestrene. The author had not sufficient material for further research, and a confirmation of his statements is therefore desirable. In addition to pinene and sylvestrene, it is said that small quantities of limonene also occur in the oil of dacryodes-resin.

[S. & Co's Rep., Oct. '99, p. 28.] *E. K.*

**Chervil Oil.**—Long ago, Gutzeit showed that the unripe fruit of chervil (*Anthriscus cerefolium* Hoffm.), when distilled, yields methyl- and ethyl-alcohol. Recently, Charabot and Pillet* have obtained, in the distillation of ripe green chervil fruit 0.0118 percent of a pale-yellow essential oil, possessing an anise-like odor, reminding of that of estragon. When left to stand for a long time, small crystals separate out from this oil, probably belonging to a paraffin. But the bulk of the oil, as already indicated by the odor, consists of methyl-chavicol, identified by conversion into its isomer, anethol, and oxidation of the latter into anisic aldehyde.

[S. & Co.'s Rep., Oct. '99, p. 14.] *E. K.*

## Botany and Pharmacognosy.

**The Examination of Several Indian Plants.**—S. Camphuijs has examined the following Indian drugs.

**Wood of Mensewa kloewason.** The bast region is colored brown and by the aid of the microscope found to contain sclerenchyma bundles, starch, calcium oxalate crystals and oil drops. The wood is distinguished by large vessels, thickened wood parenchyma and three-rowed medullary rays.

The powdered wood is saturated with petroleum ether and extracted with 96 p. c. alcohol; the extract is treated with $H_2SO_4$, made alkaline with $NaHCO_3$ and shaken with ether. After evaporation of the ether there remains a colorless, solid, uncrystalline residue, which with $H_2SO_4$ forms a salt soluble in alcohol. Likewise it combines with picric acid forming a crystalline salt.

In the physiological experiments the original powder was extracted with water at 40—50°. Bread soaked with this extract and fed to mice did not prove fatal. In like manner frogs showed no effect from a subcutaneous injection of the alkaloids dissolved in acetic acid.

The agreement in the properties of the sulphuric acid and picric acid salts leads to the conclusion that an alkaloid is present.

**Boewa kratok.** Small fruits of both light and dark brown color, without characteristic taste or smell. The microscope reveals palisade tissue and abundant starch in the seed lobes, very similar to the starch in the *Solanaceæ*. The chemical study shows a crystalline fatty acid and the absence of alkaloids, bitter principles, glucosides and phenol-like bodies.

* Bull. soc. chim., III. 21, p. 368.

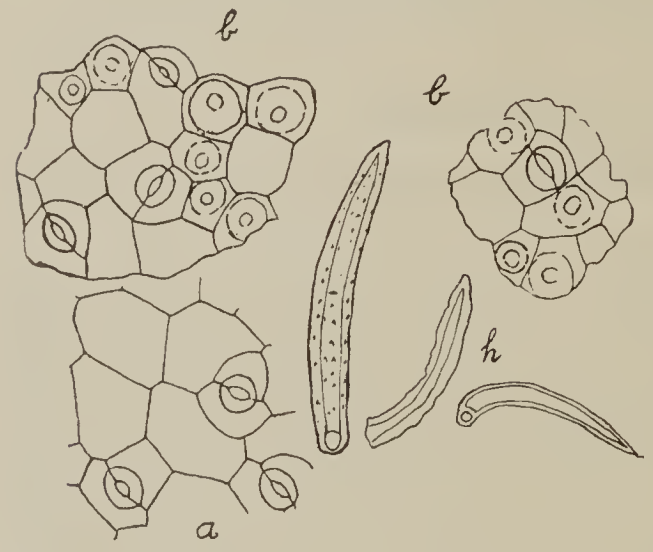
The crushed fruit is macerated in water for 24 hours. Bread soaked in the macerate and fed to mice does not produce poisonous effects.

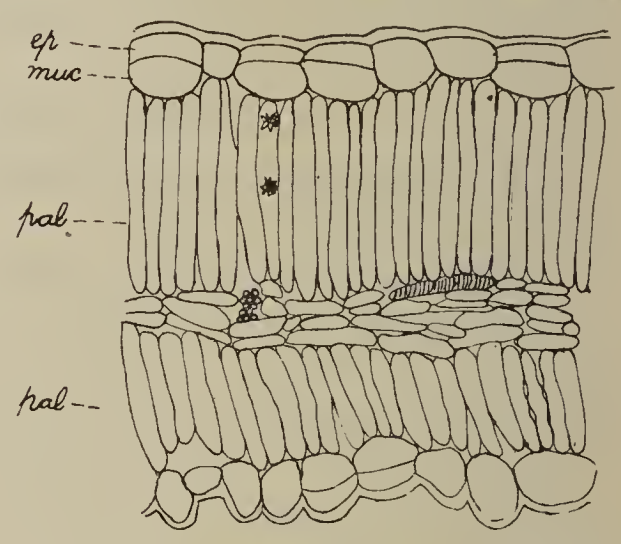
**Bidjinga.** Small fruits. The chemical examination shows the absence of phenol-like bodies and alkaloids.

The powder saturated with petroleum ether is extracted with 96 p. c. alcohol. After driving out the alcohol, the extract is mixed with acidulated water, filtered and shaken out with ether. The residue remaining after evaporation had too slight a bitter taste to be the glucoside sought.

[Apt. Ztg., 14, p. 712; from Nederl. Tijdschr. v. Pharm. etc., Nov. 1899.] *R. H. Denniston.*

**Spurious Alexandrian Senna.**—Henry G. Greenish tells of a number of adulterations which have been sold for the official Alexandrian Senna. Many of these are at present only of historical importance. The immediate cause for the article was the discovery of a large quantity of a drug, imported from Suez, and sold in the London market as Alexandrian senna.




It resembles the official drug in color and general appearance, but is easily distinguished from it by the shape of the leaflets of which it is composed. These are sharply characterized by their abovate outline, rounded mucronate apex, and distinct primate venation. The upper surface is glabrous and the lower distinctly pubescent. They attain 2 cm. in length by 1 cm. in breadth but are usually a little smaller. They have the odor of senna but a more mucilaginous taste. Thirty or more years ago these leaflets formed a regular constituent of Alexandrian senna.

It is not unlikely that some of these leaves will find their way into commerce, as powdered senna either under that name or as a constituent of compound licorice powder, large quantities of which are sold at a very low price. An endeavor was therefore made to ascertain whether their presence in powdered senna could be detected.

The leaflets of the drug in question present similar features to Alexandrian senna in that the palisade occurs on both surfaces, and the spongy parenchyma is much reduced. Mucilage is deposited in some of the epidermal

cells, whilst one-celled, thick-walled hairs, sometimes nearly straight, but often curved are frequent on the under surface. But the difference in most of the epidermal cells of the under surface is very striking, for they form distinct projecting papillae. When the surface of the lower epidermis is examined these papillae appear as more or less distinct, but seldom sharply defined rings.

Obovate senna has the reputation of being much less active than either of the official sennas, but this opinion seems to be based upon some clinical experiments made by Henry in 1828 with a quantity of the drug imported for that purpose from Senegambia.

But it remains to be proved whether that is true for the Egyptian drug, and as the latter seldom finds its way into commerce in such quantity, there is now a favorable opportunity for anyone who wishes to examine it.

[Pharm. Journ., 63, p. 470.] *R. H. D.*

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## Practical Pharmacy and New Remedies.

**Some Pharmacopœal Problems.**—C. Rice offers the following suggestions regarding changes in the next revision of the United States Pharmacopœia.

a, Authorize the Committee of Revision to introduce doses into the pharmacopœia, leaving details to the committee.

b, Authorize the Committee of Revision to introduce such of the newer remedies as fulfill the following condition: the remedy should be a definite chemical compound and its composition, physical and chemical properties should be known and controllable; and the remedy should be in regular and general use by the medical profession.

c, Instruct the Committee of Revision to extend the principle of standardization to as many of the potent drugs and their preparations, as may be found possible.

d, Instruct the Committee of Revision to introduce no physiological tests in the next revision of the Pharmacopœia.

[Am. Jour. Pharm., 70, p. 559.] *W. O. R.*

**Calcium Carbide** has been used with success as a disinfecting and drying agent, as a dressing after operations for cancer. The therapeutic activity is due to calcium hydroxide in the so-called "nascent state" and not to acetylene. [Therap. d. Gegenw., 30, p. 496. *W. O. R.*

**Calmin** is represented as a mixture of antipyrine and stercin, and is recommended for asthma and neurosis.

[Ztschr. d. a. ö. Apoth. Ver., 23, p. 892.] *W. O. R.*

**Carnigen** is a recent albumose preparation. It is a powder very soluble in water and has a very pleasant taste, no untoward after-effects result from its use. [Pharm. Centrlhl., 40, p. 724.] *W. O. R.*

**Caseon-Plasmon,** an egg albumen preparation, is light yellow in color, odorless and granular or finely powdered. It is practically insoluble in cold water, and yields turbid milky solutions with hot water. The determined constituents are proteids 78.94 p. c.; fats 4.29 p. c.; sugar of milk 4.70 p. c., and Ash 7.79 p. c.

[Ztschr. f. Unt. d. Nahrg. u. Gen.; through Pharm. Post., 32, p. 676.] *W. O. R.*

**Chloreton,** which is acetene-chloroform, has been revived under the new name, as a new hypnotic and anaesthetic which does not reduce the force of the cardiac systole nor lower the blood pressure.

[Journ. Am. Med. Assoc.; through Therap. Notes, 6, p. 75.] *W. O. R.*

**Ferrum oxydatum lactosaccharum.** A combination of milk sugar with iron salts (25 p. c. metallic iron). The preparation is readily soluble in water, has an agreeable taste, is slightly laxative, and does not blacken the teeth. [Ztsch. d. a. o. Apoth. Ver., 53, p. 894.] *W. O. R.*

**Ammonium acetate** in 33 p. c. solution, is employed as a solvent for lead sulphate, 1 gm. of the latter being completely dissolved in 10 cc. of the above solution. [Chem. Ztg. Rep. '99, p. 281.] *W. O. R.*

**Formaldehyde-Potassium (or Sodium) Metabisulphite.** Both are recently patented preparations. They result upon combination of potassium and sodium metabisulphite. The empirical formulae are $H.CHO.K_2S_2O_5$ and $H.CHO.Na_2S_2O_5$. They are crystalline, and possess antiseptic properties.

[Ztschr. d. a. ö. Apoth. Ver., 53, p. 893.] *W. O. R.*

**Iodopyrine,** which is an antipyrin derivative, having one hydrogen atom in the pyrazol ring replaced by iodine, possesses antiseptic properties in addition to those of antipyrine. [Therap. Mtshft., 13, p. 605.] *W. O. R.*

**Mercurol,** a new noncorrosive germicide, introduced by Parke, Davis & Co., is a nucleid (nucleinic acid from yeast) of mercury soluble in water, slightly alkaline in reaction. Albuminous substances are not coagulated by mercurol nor do alkalies cause the precipitation from solutions.

[Physician and Surgeon; through Therap. Notes, 6, p. 61.] *W. O. R.*

**Sandoderma** is a new preparation for absorption of discharges of wounds. Instead of impregnating glycerin with starch, talcum, or zincoxide, very finely powdered bismuth subnitrate and absorbent cotton (equal parts by weight) are employed, yielding a far more satisfactory preparation.

[Apoth. Ztg., 14, p. 694.] *W. O. R.*

**Potassium permanganate,** 0.5 gm. to 1 litre water is recommended as a reliable antidote for strychnine poisoning. Oxidation of strychnine to practically inert compounds is rapid. After expulsion of the solution the stomach should be washed with a dilute solution of potassium permanganate solution (1:5000). [Chem. Ztg., Rep., '99, p. 317.] *W. O. R.*

# Literary.

## Books and Pamphlets Received.

Authors—New York. A system of instruction in qualitative chemical analysis by A. H. Elliott and G. A. Ferguson. Third edition revised and enlarged. One volume, pp. 155. 1899.

Author—Washington. Preliminary catalogue of plants poisonous to stock by V. K. Chestnut. Reprinted from the annual report of the Bureau of Animal Industry for 1898. Pamphlet, pp. 34.

Librairie J. B. Baillière et Fils—Paris. Formulaire des médicaments nouveaux pour 1900 par H. Bocquillon-Limousin. 1 vol. in -18 de 324 pages, cartonnée. 1900. 3 fr.

Verlag von Johann Ambrosius Barth—Leipzig. Justus von Liebig und Christian Friedrich Schoenbein, Briefwechsel 1853—1868. Mit Anmerkungen, Hinweisen und Erläuterungen versehen und herausgegeben von Georg W. A. Kahlbaum und Eduard Thon. Ein Bd., pp. 278. 1900. M. 6.00.

Bibliographisches Institut—Leipzig und Wien. Das deutsche Volkstum. Unter Mitarbeit der Professoren H. Helmolt, A. Kirchhoff, H. A. Köstlin, A. Lobe, E. Mogk, C. Sell, H. Tode, O. Weise und J. Wychgram, herausgegeben von Prof. Dr. Hans Meyer. Ein Gr. Oct. Band, 680 Seiten mit 30 Tafeln in Farbendruck und zahlreichen Textabbildungen. 1899. M. 15.00.

Verlag von Gebrüder Borntträger—Berlin. Carus Sterne: Werden und Vergehen. Vierte verbesserte Auflage. Lieferungen 3—10, pp. 113—546. Schluss des ersten Bandes.

Verlag von Ferd. Enke—Stuttgart. Lehrbuch der Chemie für Pharmaceuten. Von Dr. Bernhard Fischer, Director des chemischen Untersuchungsamtes der Stadt Breslau. Vierte vermehrte Auflage. Ein Band, 650 Seiten mit 105 Textabbildungen. 1899.

U. S. Dept. of Agriculture—Washington. Division of Botany. Contributions from the U. S. National Herbarium, Vol. V, No. 4. Issued October 31, 1899. One volume, pp. VIII, 115.

## Reviews.

A Manual of Organic Materia Medica and Pharmacognosy. An introduction to the study of the vegetable kingdom and the vegetable and animal drugs. By Prof. Lucius E. Sayre, with Histology and Microtechnique by William C. Stevens. One vol., pp. 659, with 374 illustrations. P. Blakiston's Son & Co., Philadelphia, Pa.

The revised edition of this text-book differs from the first principally in the substitution of a treatise of 150 pages on Histology and Microtechnique by Prof. W. C. Stevens for 60 pages of Pharmacal Botany. The chapter on Organic Synthetical Remedies has also been replaced by a very condensed classification of the Carbon Compounds for the purpose, as the author states, of showing the student how organic drugs are regarded from a chemical standpoint.

The present work is divided into four parts as follows: Part I., Organic Materia Medica and Pharmacognosy; Part II., Descriptions of Organic Drugs: Part III., Insects injurious to drugs; Part IV., Elements of Plant Histology and Microtechnique.

In the introduction to Part I. the author discusses classification and adopts, as the most satisfactory, the botanical classification for the reason that it shows relationship. He adheres, however, to the antiquated arrangement of Bentham and Hooker, which begins with the *Ranunculaceæ* and ends with the *Algæ*, just the opposite of the natural order of evolution. The conveniences claimed for this system are not apparent to the writer.

The synopsis of therapeutical agents and their definitions which follows will be of great value to those who are not familiar with the technical terms employed under "Action and Uses" with each official drug discussed.

Why the author omitted the *Filices* from the Cryptogams on page 38 and inserted *Aspidium* among the rhizomes of the Phanerogams on the following page, is not clear. Furthermore, the botanical order adopted in the body of the work is not rigidly adhered to in the synopsis. For example on page 38 under roots and on page 39 under rhizomes the plants lowest in the scale of evolution are considered first, viz.: Cryptogams, Monocotyledons, Dicotyledons, etc. This is the proper treatment, but does not agree with the author's idea. In the classification of the Cryptogams on pages 38 and 47 the Lichens are singularly treated between the *Algæ* and the *Fungi*.

In Conspectus B. the official and unofficial drugs are arranged according to prominent physical properties and subdivided by odor and taste. After the Latin title and English common name the page where the drug in question is discussed is given. Then follows an abbreviation of the natural order, to which it belongs, in the same style of type. It would have been better to make this name conspicuous by contrast. The idea is a good one, but there is no plausible reason for abbreviating; it certainly does not look well, and furthermore there is lack of uniformity in the abbreviation. For example we see in different places Polygalac., Polygal.; Liliace., Liliac.; Berberid., Berberidac.; Ericaceae, Ericac.; Polygonac., Polygon.; Ranunc., Ranunculac.; Gentianace., Gentianac., and so on. In some cases the order is omitted entirely.

Part II. constitutes the largest portion of the book and deals with the description and arrangement of organic drugs from the vegetable kingdom. The drugs are considered in family groups, the common characters first given, then a synopsis of the drugs belonging to that family with the official ones in bold-faced capitals. The Latin and English pharmacopœial titles, common English and German names, pharmacopœial description, botanical characters of the plant, source, description, constituents, adulterations (if any), action and uses of the drug follow in their order. The non-official drugs are very briefly treated. A new feature is the statement in few words of the method of separation of the active principles, such as alkaloids and glucosides contained in the different drugs.

The illustrations are, on the whole, very good, but especially fine are the cross sections of *Aconitum*, *Cimicifuga*, *Hydrastis*, *Caulophyllum*, *Podophyllum*, *Sanguinaria* and *Rhatania*, and should, for justice sake, bear the name of the contributor, while those of *Cinnamomum*, *Spigelia*, *Gelsemium*, *Cinchona rubra*, *Viburnum prunifolium*, *Haematoxylon*, *Rhamnus purshiana*, *Rhamnus frangula*, *Picraena excelsa* and *Quassia amara* are more or less diagramatic and below the standard. A pharmaco-geographical map of South America, similar to the Bedford maps which appeared some years ago, makes its first appearance in this edition.

As to the actual revision of the text, the author has kept pace with the advancement in pharmaceutical research as pursued in this country and England, but has apparently neglected some of the results of the finest researches of Germany and France. Pfaff's work

on *Rhus toxicodendron*, Tschirch's on the resins, gum-resins, resins, and on aloes, the work on Absinthium, Capsicum, Galanga and others are not recognized.

The statement on page 216 that "the alkaloid pelleteirine is the taenifuge in most extensive use at the present time" is contrary to the testimony of the medical profession. The preparation of white pepper is not correctly given nor is vanillin made on a large scale from coniferin. Furthermore, vanillin is not developed in the fruit by ripening, but rather by a process of curing. There must be some misunderstanding regarding the habit of the colchicum plant. The text says: "Grows in sandy places near the coast. Bulb half immersed in the soil." It does not grow in sandy places, neither is it a bulb, and it is embedded in the soil from 6 to 10 inches. This description would apply very well to the preceding drug squill.

A contradiction is noticed on pages 99 and 101. Under Chelidonium it says that chelerythrine is identical with sanguinarine. Yet on page 101 under Sanguinaria it says that sanguinarine yields red salts, while chelerythrine yields lemon-yellow salts.

Chapter III., which is devoted to insects injurious to drugs and the remedies for their destruction, remains practically the same as in the first edition. This constitutes a principal feature of the work and, though a subject of vital importance to the practicing pharmacist, it is one, unfortunately, to which too little attention is directed.

Chapter IV. on Histology and Microtechnique by Prof. W. C. Stevens is new in this edition. The author takes up in their order Selection and Use of Apparatus, Section Cutting, Cell and Cell Contents, Cell Formation, Tissues and Tissue Systems, Secondary Increase in Thickness, Distribution of Tissues in Leaves, Reagents and Processes, Microchemical Methods and Microchemical Examination of Powdered Drugs.

A perusal of the first two chapters shows plainly that the author is familiar with the numerous little difficulties which the beginner invariably encounters when he takes up the study of micro-botany. Every step which must be taken from the setting up of the instrument to the examination of the mounted specimen is taken up in detail in so clear and simple a manner that no beginner can fail to proceed correctly and intelligently if the text be carefully followed. The cutting of sections by hand and especially the explanation of sections cut in three different planes is clearly presented both by text and by illustration.

The remainder of the treatise is characterized by the same careful and scientific treatment and certainly redounds to the credit of the author. The chapter on micro-chemical testing embodies our present knowledge upon the detection of the most important cell contents.

This treatise possesses the dignity of a text-book and should have been bound separately. It of course adds to the value of the book as a whole, but its own usefulness is somewhat restricted by being encumbered with the additional 500 pages of Materia Medica text.

Sayre's Organic Materia Medica maintains its usual standard and will, no doubt, enjoy increased patronage from the practicing profession to whose wants this edition has been especially adapted.

*J. O. Schlotterbeck.*

LABORATORY MANUAL. By Dr. H. W. Hillyer, Assistant Professor of Organic Chemistry in the University of Wisconsin. The Macmillan Company, New York. 1899. Price 90 cents.

In the past few years a great many books of this class have been given to the public, and in the main they illustrate the growing tendency to abandon the older "cook-book" chemistry in favor of a more reasonable and scientific view of the science. Professor Hillyer has evidently felt the importance of directing his students to read and think, as well as to experiment, and with this end in view has emphasized the fact that the mere writing and finishing of copious notes, however well done, does not constitute a profitable laboratory course in chemistry. The book after giving a few of the usual directions for the manipulation of glass and for some of the more common processes, such as filtration and distillation, enters into the study of some of the common elements and compounds, concluding with a second part, given up to a few simple quantitative operations, some of which are original. It is to be regretted that some of the latter are not introduced in the beginning of the course, for if, as is stated on the title page, the manual serves "to illustrate the Elementary Principles of Chemistry," and if, as is evident from the use of symbols throughout, the author bases his teaching on the atomic theory, the student might well be directed to learn one of the most important series of facts and to base his fundamental theory upon his own experience. It is difficult to understand why the elementary principles of chemistry should be so largely qualitative in character, while those of physics have grown to be entirely quantitative.

In the text an occasional minor looseness of expression is observable. So on page 30 the question is asked why the action of sodium is different when placed on moist filter paper from what it is when the same metal is dropped into a basin of water. The misunderstanding that a different chemical action is meant might readily arise. On page 51, the heating of wood, hair etc. in a test tube is used to illustrate the occurrence of water in organic matter, thus giving the impression that all of the water which separates was present in the organic matter as such. On page 64, the question is asked, "is ammonia lighter or heavier than air" instead of, "is its specific gravity greater or less than air." These and a number of others are, however, only minor imperfections. On the whole, although the book is not strikingly original and the author has not freed himself entirely from older traditional methods, it is one of the best of its kind and as such can be recommended.

It is to be hoped that in a future edition some of the elementary topics of physical chemistry will be introduced. The fundamental principles of this subject are by no means difficult to understand, even though the student is a beginner, and a comprehension of some of the theories of solution, electrolysis, osmotic pressure, the gas laws and a few other topics is a great help in a further comprehension of the science. *Paul C. Freer.*

DAS DEUTSCHE VOLKSTUM. Unter Mitarbeit der Professoren H. Helmolt, A. Kirchhoff, H. A. Köstlin, A. Lobe, E. Mogk, C. Sell, H. Tode, O. Weise und J. Wychgram, herausgegeben von Prof. Dr. Hans Meyer. Ein Gr. Oct. Band, 680 Seiten mit 30 Tafeln in Farbendruck und zahlreichen Textabbildungen. Bibliographisches Institut, Leipzig und Wien. 1899. Preis Mk. 15. Geb.

Seinem Titel und Gegenstande nach gehört dieses Werk nicht in den Rahmen und das Recensionsgebiet eines naturwissenschaftlichen Fachjournales, der gesammte an die germanische Welt appellirende Gehalt und die in jeder Weise vorzügliche und hoch interessante Darstellung des ausgezeichneten Werkes geben demselben aber für alle deutsch-amerikanischen Kreise eine Bedeutung und einen Werth, durch welche es allgemeine Beachtung und weite Verbreitung verdient. Unsere Leser, welche sich mit dem Buche bekannt machen, werden uns Dank wissen, sie auf dasselbe, falls das nicht schon anderweitig geschehen ist, aufmerksam gemacht zu haben. Die conventionelle

Phrase, das Buch sollte in keiner deutschen und deutsch-amerikanischen Familie fehlen, ist in diesem Falle durchaus am Platze. Dasselbe entrollt in schöner Diction und anregender Sprache ein harmonisches Gesammtbild des Werdeganges der deutschen Kulturgeschichte. Es erfüllt voll und ganz den Zweck des Herausgebers, durch eine sichtende und klärende Erörterung der schicksalsreichen Gestaltung des deutschen Volkstums und des im Laufe der Jahrhunderte crystallisirten deutschen Nationalcharacters und seinen pathologen und normalen Erzeugnisse im kulturellen und politischen Leben und Wirken des deutschen Volkes zur verständnissvollen Anschauung zu bringen. In wie umfassender und gehaltreicher Weise diese Aufgabe vollbracht worden ist, ergiebt sich schon aus der Eintheilung, in welcher das Werk bearbeitet worden ist. Diese Gliederung ist folgende: Das deutsche Volksthum von Hans Meyer, die deutschen Landschaften und Stämme von A. Kirchhoff, die deutsche Geschichte von H. Helmolt, die deutsche Sprache von O. Weise, die deutschen Sitten und Gebräuche von E. Mogk, die altdeutsche heidnische Religion von E. Mogk, das deutsche Christenthum von C. Sell, das deutsche Recht von A. Lobe, die deutsche bildende Kunst von H. Thode, die deutsche Tonkunst von H. A. Köstlin, die deutsche Dichtung von J. Wychgram.

Ein auch nur oberflächliches Eingehen auf die Reichhaltigkeit und Fülle des geistvoll geschriebenen Werkes lässt der Raum dieser Zeitschrift nicht wohl zu. Dasselbe gehört zu den werthvollsten kulturgeschichtlichen Büchern, welche an der Jahrhundertwende den Deutschen und besonders den im Auslande lebenden, welche sich Verständniss für das schöne Land ihrer Herkunft bewahrt haben, dargeboten wird. Und wenn diese etwas abhanden gekommen oder von den in Amerika geborenen niemals erworben sind, die können aus dem trefflichen Panorama, welches das Buch für die Genesis deutscher Gebräuche, Gesittung und Kultur, deutscher Arbeit und Leistung in klaren Zügen entwirft, einen Commentar dafür gewinnen, wie Deutschland als die Arena der vernichtenden Kulturkämpfe aller Art und aller Volksstämme sich aus allem Missgeschick und endloser Zersplitterung immer wieder als der Hort urwüchsiger und eigenartiger Kraft und Gestaltung auf allen intellectuellen und kulturellen Gebieten erhoben hat und wie es als der rechte und reichste Boden für die grössten reformatorischen Umgestaltungen und Fortschritte der Menschheit in vielhundertjährigem Wandel nicht nur als Kulturmacht,

sondern auch in seiner politischen Stellung unter den Nationen der Erde gross geworden und geblieben ist.

Möge das hochinteressante und in jeder Weise vorzügliche Buch auch in den Vereinigten Staaten gebührende Verbreitung finden; Werthschätzung und Geltung wird es sich überall voll und ganz erwerben. *Fr. H.*

COMMERCIAL ORGANIC ANALYSIS. A treatise on the properties, proximate analytical examinations, and modes of assaying the various organic chemicals and products employed in the arts, manufactures, medicine with concise methods for the detection and determination of their impurities, adulterations, and products of decomposition by Alfred H. Allen. Third edition, with revisions and addenda by the author and Dr. Henry Leffmann. Vol. 1: Introduction, alcohols, neutral alcoholic derivations, sugars, starch and its isomers, vegetable acids, etc. One vol., pp. 557, illustrated. 1898. $4.50.

The name of Allen's commercial organic analysis has so long been a household word with chemical analysts that it requires no introduction to an English reading public. Although the revisors have not been able to give such care and attention to the third revision as they might have done but for the violation of ethics underlying copyright, the work still remains the standard at least in the English language.

Instead of taking up a general discussion of the volume, the writer desires principally to call attention to the subjects considered that are of special interest to the pharmaceutical chemist. Thus, e. g. the subjects of methyl and ethyl alcohols, and the detection of the former in the latter, and the alcoholic strength of tinctures are of special importance. Amyl alcohol and fusel oil; ether; the esters used in fruit essences; ethyl nitrite and spirit of nitrous ether; amyl nitrite; the anaesthetics, ethyl chloride and bromide; formic aldehyde, chloral hydrate, butyl chloral hydrate etc.; chloroform, bromoform and iodoform; the organic acids, acetic acid, vinegar and the acetates; succinic, melic, tartaric, citric acids and some of their more important commercial salts; all come in for their fair share of attention. Indeed fully one-half of the volume is devoted to these subjects. The other half is taken up by the carbohydrates, the sugars, starches, and the various preparations obtained therefrom.

To apply the ordinary standards of criticism to a volume that had to be as hastily prepared as was necessary in this instance would

not be fair. The writer may, however, be permitted to call attention to a few things that call for addition or revision, when a fourth edition comes up for consideration, by the authors. The introductory chapters should be brought up to date. Thus, e. g. Victor Meyer's vapor density method is given. The boiling and freezing point methods for determining molecular weights which are now universally used in chemical laboratories and which have also been introduced into several branches of commercial organic analysis, should be described. Under Chlorine, Bromine and Iodine, Carius' excellent method for their determination is not given, neither is any mention made of their ready detection by the exceedingly simple means of the copper oxide wire and the Bunsen flame. These two instances may suffice to show that dishonest competition stands in the way of the best development of honest business and literary development. Undoubtedly the later volumes will be accorded more time and better treatment. Paper and press work are good and the binding serviceable. *E. K.*

SCHULE DER PHARMACIE. Herausgegeben von Dr. J. Holfert, Dr. H. Thoms, Dr. E. Mylius, Dr. K. F. Jordan. V. Waarenkunde. Bearbeitet von Prof. Dr. H. Thoms und Dr. J. Holfert. Ein Bd., pp. 391, mit 194 in den Text gedruckten Abbildungen. Zweite vermehrte und verbesserte Auflage. Verlag von Julius Springer, Berlin. 1899. Geb. M. 6.00.

With the appearance of the fifth part of this valuable text-book for pharmaceutical apprentices and assistants, the second edition of the "Schule der Pharmacie" has reached its completion. Parts one to four of the revised edition have already been reviewed in the columns of this journal: Part I., dealing with what we in this country generally term practical pharmacy, in vol. 16, p. 124; Part II., on chemistry, in the same volume, p. 166; Part III., on physics, in vol. 17, p. 84; and Part IV., on botany, in the same volume, p. 88.

The last or fifth part takes up the subject of materia medica, i. e. the definition and description of medicinal materials, how they are to be identified and tested. The matter is arranged alphabetically in each of four groups comprising first, the inorganic chemicals; second, organic chemicals; third, vegetable remedies; and fourth, animal remedies. The criticism has been made that the various drugs, chemical as well as biological, should have been discussed in the chemical and botanical parts of the series. Inasmuch, however, as these parts are intended primarily as text-books on the respective

subjects, the separation of the "Waarenkunde" from the chemical and botanical texts can only be welcomed. Reference to these parts whenever necessary can be only beneficial, whereas the burdening of the chemical text e. g. with detailed descriptions and tests would have proven decidedly detrimental. *E. K.*

LEHRBUCH DER CHEMIE FÜR PHARMACEUTEN. Von Dr. Bernhard Fischer, Director des chemischen Untersuchungsamtes der Stadt Breslau. Vierte vermehrte Auflage. Ein Band, 650 Seiten mit 105 Textabbildungen. Verlag von Ferd. Enke in Stuttgart. 1899.

The various editions of this text-book of chemistry have been considered several times in the pages of this journal (Vol. 3, 1885, p. 188, Vol. 4, 1886, p. 72, Vol. 9, 1891, p. 225, and Vol. 12, 1894, p. 297). The book has evidently met with appreciation and success as a text-book for the introduction of beginners in Pharmacy into the domain of pharmaceutical chemistry in Germany, where the requisite preliminary education for admission into pharmacy is a more uniform and considerably higher one than in the United States and where the owner of the pharmacy is obliged to extend to his apprentice a verbal instruction in the elements of the practice of pharmacy. The main object of this book is to serve as a basis for such instruction in chemistry.

The contents of the work are the customary ones, inorganic and organic chemistry, qualitative and volumetric analysis and those parts of physics specially related to applied chemistry, including instruments and various apparatus.

The book is well adapted for its purpose and may be used as a text-book for students or as a compend for reference. Its use for the latter purpose is much facilitated by a comprehensive alphabetical index. *Fr. H.*

PHYSICIAN'S VISITING LIST. P. Blackiston's Son & Co., Philadelphia.

This is a neat, compact, well bound article of its kind. In addition to the visiting list there are spaces for cash assets, births, deaths, obstetric engagements, vaccinations, etc.

The first sixteen pages contain printed matter which is necessarily referred to often the busy physician: a calendar, a dose table, table showing at a glance the probable date of child birth in any given case, equivalents in metric and apothecaries' weights and hints on treatment of asphyxia and apnea. *S. R. Boyce.*

# SUPPLEMENT.

## Educational and Scientific.

M. Henry Moissan has been elected Professor of Inorganic Chemistry of the Paris School of Pharmacy, at which institution he previously held the professorship in toxicology. In his first lecture in November last, he gave a short address on the career of Professor Riche, who has retired and whose chair he now fills.

**Education by Correspondence.** — "The rapid growth and remarkable popularity of schools of correspondence prove that this new system of education meets a distinct want and has come to stay," claims the Scientific American. "Their *raison d'etre* is to be found in the desire of the industrial classes to meet the demand of the technical trades for skilled workmen and foremen, whose education shall include something more than the three "R's" of the district school.

"Of the many institutions that are giving instruction by correspondence, the International Correspondence Schools, of Scranton, Pa., is the largest and most representative of the many that are now in more or less successful operation. The Scranton establishment has 130,000 students on its books and is rapidly adding to this enrollment. Starting in 1891 merely as a school of instruction in mining, the scheme of education has widened to include practically the whole field of technical instruction, the intending students having the choice of some sixty separate courses, conducted by a corps of 226 professors and assistants. These figures are surprising and certainly go to prove that instruction by correspondence forms one of the most valuable educational agencies of the day.

"Although the roll of the International Correspondence Schools includes the names of many people who are holding responsible positions in the various professions and are already possessed of a liberal education, the chief aim of the schools is 'to enable people who are engaged in the industrial trades to supply deficiencies in their education due to lack of opportunity or application in their younger days.' As thus defined, it is evident that the movement is operating in an entirely new field, being a competition neither with the high school, the technical school, nor the university. There is no question that the ambition of the average American to become a wage-earner frequently leads him to exchange the school for the workshop long before the former has had the necessary time to give him his proper equipment; and while he may for the first few years consider himself financially the gainer, it frequently happens that his advancement in his trade is brought to a full stop by the lack of technical knowledge. It is too late for him to 'go to school again,' for he can neither afford the expense nor is he willing to give up a position which he may not again be able to secure. The night-school, of course, in many cases affords a partial solution of the difficulty; but there are multitudes of workers for whom these admirable institutions

are not available, especially in the thinly-populated and rural districts. Another type that is beginning to avail itself of correspondence instruction is the professional man who wishes to acquaint himself with the principles of a kindred profession, whose work at times overlaps his own. Such a case is that of the architect, who finds that a knowledge of the principles of engineering as applied to the design of framed metal structures is necessary if he is to be full master of his own profession. Many of the students, again, are educated men who wish to study special branches of engineering, or make a thorough review of their former studies; and hence, while the bulk of the students of these schools are drawn from the artisan and farming classes, there is a considerable and increasing number of students of broad education who are taking special courses in the more advanced branches.

"The test of eligibility to become a student is that the candidate must be able to read and write English. The schools, to use the language of their prospectus, undertake to teach him 'whatever he needs to know.' In taking him through a course, the instructor proceeds upon the curious assumption that his pupil knows absolutely nothing about the subject. The assumption is curious and original, but thoroughly philosophical; for, if the student is acquainted with the earlier stages, he passes quickly through them, merely refreshing his memory, while the instructor is certain that in every case the student lays a proper foundation for future work."

The curriculum includes no less than sixty separate courses. One of them is chemistry. This course differs from similar courses given by pharmaceutical institutes in that the student is provided with a set of reagents and apparatus to cover the experiments included in the course.

After giving a more or less detailed account of work done in several of the engineering departments, the Sc. Am. concludes: "From what has been said it will be evident that the new method of instruction as carried out by the Scranton establishment is qualified to rank as one of the most important educational agencies of the day. As long as it is prosecuted along the practical and very thorough lines above described, it cannot fail to exert a helpful and lasting influence upon both the characters and fortunes of thousands of students who devote their leisure hours to its work."

PROCEEDINGS RECEIVED:—

Michigan, Proceedings of the seventeenth annual meeting of the Michigan Pharmaceutical Association, held at Jackson Aug. 15—17, 1899, pp. 76.

Proceedings of the first annual convention of the National Association of Retail Druggists, held at Cincinnati, Oct. 3 to 6, 1899, pp. 36.

Massachusetts. Proceedings of the eighteenth annual meeting of the Massachusetts Pharmaceutical Association, held at Holyoke, June 13—15, 1899. pp. 172.

## Bibliography.

"Bulletin des Etudes Pharmaceutiques" is the name of a new pharmaceutical journal to be edited by a group of assistant professors at the Paris School of Pharmacy. It is

to be the organ of the "jeune école" and one part of the journal will be devoted to their papers on pure science, the other half to the more practical side of pharmacy.

Those interested in the proceedings of the Danzig meeting of the German Apothecaries' Society of last August, will find the complete stenographic report in No. 95 of the Apotheker Zeitung (Berlin) issued Nov. 29.

The want of local trade journals in the old North-west is about to be supplied with a vengeance if the creation of new journals goes on as it has during the past few months. Not long ago we called attention to the Midland Druggist published in Columbus, O. Recently our attention was directed to the Milwaukee Pharmaceutical Journal, and now the Northwestern Druggist makes its appearance at St. Paul.

Bulletin of the Lloyd Library. "For some time we have been considering the advisability of utilizing a number of the rare works on the shelves of the Lloyd Library of Pharmacy and Botany, in a manner that will conserve the interests of scientific societies and libraries. Our plan is to publish in as nearly facsimile as possible, the rarest of the early works connected with Pharmacy, Materia Medica, and Botany, and to supply them by exchange to journals and societies connected with these branches of science, and also at the nominal price of $1.00 per issue to individuals who desire them for their private libraries. But while this will be a feature of each Bulletin, we shall also aim to contribute more or less original matter, such as biographies and portraits, as well as other subjects of interest.

The contemplated new departure for the Lloyd Library is now accomplished by instituting the series of Bulletins, of which this is the initial number.

The present Bulletin carries a complete reproduction of the "Collections for a Materia Medica of the United States," by Benjamin S. Barton, which we aim to make as nearly in facsimile as possible — punctuation, size of original page, spelling of words, and style of type. This work, being the first English attempt at a materia medica of American plants, is an invaluable historical reference book, and should be in every library connected with pharmacy and botany. We have also prepared a biography of the author as an introduction, and present his portrait as a frontispiece.

Our second Bulletin will reproduce, in full, the first work on medicine published west of the Alleghany mountains, Peter Smith's Dispensatory, of which but one copy is known to exist. The third will reproduce the Materia Medica Americana of Schoepf, which was the first botanical work connected with American medicinal plants."

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The announcement made a month ago that the firm of Harper & Brothers was facing a stupendous crisis, shocked the American public and especially the literary world. This was followed only a few days later by the great Philadelphia fire in which the firm of J. B. Lippincott & Co. was such a heavy sufferer. Pharmacists felt especially

concerned in the latter, for only a few weeks previously the eighteenth edition of the United States Dispensatory had appeared from the press. Fortunately, however, a large number of copies had already been placed with book dealers. Still better is the news that all but a few of the plates were saved. All of the plates of Remington's Practice of Pharmacy were also saved, and before the fire had been completely extinguished, paper was ordered for both works to be reprinted.

The list of recent events in the American publishing business is not complete without reference to the death of Mr. Wm. H. Appleton, Oct. 19, who for a period of nearly fifty years successfully managed the affairs of the large firm of D. Appleton & Co. The revision of the American Cyclopaedia, of which President Adams of the University of Wisconsin was editor in chief, with an outlay of over a million dollars and ten years of labor, may seem a large undertaking, but the risks which the firm ran in other directions were possibly not less. Thus the editor of the Popular Science Monthly, in reviewing the career of Mr. Appleton, comments on the growth of more liberal scientific ideas and the opposition to them some decades ago:

"Scientific circles in this country have never realized the debt they owe to D. Appleton & Company, and especially to William H. Appleton, in this regard. It is no exaggeration to say that the advance of science in the United States was hastened by more than a quarter of a century by the enlightened and courageous policy which led the firm to add this class of books to their lists at the time they did. Everything apparently was against it—nothing in its favor. Our scientific literature consisted mainly of a few text-books having only a limited sale. Science itself was an affair of laboratories and bug collectors, the one to be shunned and the other commiserated. The few utterances of scientific men having a bearing on the great questions of the right interpretation of Nature, man's relations to his fellows and to the world at large, social betterment, etc., that here and there arrested public attention were received with contemptuous sneers or scouted as the rankest infidelity. Few who are not past middle life will find it possible now to realize that this was the general attitude toward science forty years ago, but we have only to refer the reader to the writings of the time for abundant confirmation of our statements.

"It was such conditions as these that the firm was called upon to face when considering the question of entering this new field of publication. All ordinary business instincts were against it. Scarcely a publisher either here or abroad would even listen to the proposal to risk his capital in such an enterprise. Nevertheless, Mr. Appleton, lending an appreciative ear to the arguments of the former editor of this journal and displaying his usual foresight, finally decided in favor of the project, which afterward resulted in the introduction of the works of Spencer, Darwin, Huxley, Tyndall, Bain, Romanes, and other distinguished writers to American readers. A further step in the same direction, taken later, was the publication of the International Scientific Series, now numbering some eighty volumes. The scheme as originated and shaped

by Professor Youmans was heartily seconded by Mr. Appleton, as was also the plan of the Popular Science Monthly."

CATALOGUES RECEIVED:—

F. A. Brockhaus—Leipzig. 1. Mittheilungen. No. 1, 1899. Monthly list of new books. October and November 1899.

Lempcke & Buechner—Leipzig. Monthly bulletin of world literature. October 1899.

The Macmillan Company—New York. Book Reviews, December 1899.

U. S. Dept. of Agr.—Washington. Monthly list of publications. November 1899.

Oswald Weigel—Leipzig. Lagerkatalog, 1900.

H. Welter—Paris. Catalogue No. 115. Gazette des peroidiques revues, journaux and collections.

## Commercial.

According to the Pharmaceutical Journal (63, p. 562 d), the Liebig's Extract of Meat Company has decided to use a further distinguishing mark on their preparation in addition to the signature in blue of J. v. Liebig. After Jan. 1, 1900, the term "Lemco" will be added to all labels attached to packages of the company. The term is derived from the initial letters of the name of the firm. This is in accord with the recommendations of Mr. Duell of the U. S. Patent Commission, before the International Congress (see Pharm. Jour., 17, p. 591).

**Orange-flower Oil.**—The harvest of flowers in the south of France has been normal. The result was above the average. The price, which ran about Frs. 0.50 per kilo, was very reasonable. The purchase price of first rate distillates was in proportion, from Frs. 280.— to Frs. 320.— per kilo. In the course of this year's distillation, Mr. Jean Gras, pharmaceutical chemist at Cannes, has thoroughly studied the yield of the flowers at different dates of the crop with an exactly defined quantity of flowers. By these means, the fact has been established, that the oil-content of the flowers is lowest at the beginning of the harvest, increasing considerably as the season proceeds. The results, as recorded by Mr. Gras, are very interesting, the experiments having been made with flowers from Cannes, Le Cannet and Golfe-Juan. The yield varied from 0.80 percent to 1.23 percent.

Of the 30 distillates, collected separately, 25 were examined chemically, but no difference of any importance could be found. In the samples, the optical rotation fluctuated between $+3°\ 33'$ and $+5°\ 24'$, at 20°, the specific gravity between 0.873 and 0.877, at 15°, the saponification number between 35.3 and 44.8. All oils were soluble in 1½ volumes of 80 percent alcohol.

**High Price of Cocaine.**—According to the New York Tribune, persons who are accustomed to buying cocaine have been forced to pay much more for it recently than the normal price. In fact, the drug has risen from $2.50 an ounce to $6.25 an ounce in the last few months. This is caused by the revolution in Peru. That South American republic raises practically all the raw cocaine that the world consumes. It is manufactured from the leaves of the coca plant, and to supply the demand in this country the dry leaves are either

shipped north and the drug manufactured here or a coarse native product made from the leaves in Peru, is brought here and refined by improved processes.

The revolution has prevented the gatherers of coca leaves from shipping their product to Lima, the principal market, hence a short supply and an increased price. The indications are, however, that the top notch of the rise in prices has been reached, as Peru shows signs of settling down again for a short time at least.

PRICE LISTS RECEIVED:—

Bausch & Lomb—Rochester. Chemicals and reagents, Catalogue G.

John F. Diemer—New York. Trade list for 1898. Catalogue No. 16, document fileing specialties.

Eimer & Amend—New York. Descriptive price list of Chaddock's laboratory specialties.

Fritzsche Bros.—New York. Wholesale price list. November, 1899.

Königliche Porzellan-Manufactur—Berlin. Preis-Verzeichniss No. V. January 1st, 1899.

Schering & Glatz—New York. 1. Price list of medicinal and toilet soaps manufactured by J. D. Stiefel, Offenbach-on-the-Main, Germany.

2. Price list of fine chemicals with notes on a number of new and important therapeutic agents. November, 1899..

Carl Schleicher & Schuell—Dueren, Rheinland. Piltrir-Papiere.

Wilh. Spoerhase—Giessen, Germany. Catalogue. Abtheilung 1. Präcisions-Waagen und Gewichte, für wissenschaftliche und technische Zwecke. 1896.

Robert Stevenson & Co.—Chicago. Monthly circular. November, 1899.

PAMPHLETS RECEIVED:—

William C. Alpers—New York. The Alpers Pharmacy. Pamphlet, pp. 14.

V. Koechl & Co.—New York. The therapeutics of benzosol by F. G. Butler. Pamphlet, pp. 16. Reprint from The American Therapist.

G. Leininger Chemical Co.—Chicago. Dr. Geo. Leininger's disinfector and deodorizer. Pamphlet, pp. 34.

Philadelphia Comercial Museum—Philadelphia. 1. American trade with Siam. Pamphlet, pp. 31. 2. The world's commerce and the United States' share of it. Pamphlet, pp. 15. 3. The Republic of Guatemala by Gustavo Niederlein. Pamphlet, pp. 63.

Rumford Chemical Works—Providence, R. I. Baking Powders. A treatise on the character, methods for the determination of the values, etc. with special reference to recent improvements in phosphate powders, by Charles A. Catlin. Pamphlet, pp. 44.

Schering & Glatz—New York. 1. Utropin. Pamphlet, pp. 32. 2. Schering's formalin disinfectant and deodorizing lamp. Pamphlet, pp. 16. 3. Trikresol. Leaflet, pp. 4. 4. Xeroform. Leaflet, pp. 8. 5. Rubidium iodide. Leaflet, pp. 2. 6. Alpha-Eucain and Beta-Eucain. Pamphlet, pp. 16. 7. Argentamine. Pamphlet, pp. 16, 8. Schering's glycero-phosphates. Leaflet, pp. 4. 9. Hyrgolum, Pamphlet, pp. 21. 10. Creosotal and dutal. Pamphlet, pp. 16. 11. Anusol suppositories. Leaflet, pp. 2. 12. Collargolum and unguentum Credé. Pamphlet, pp. 24. 13. Euphthalmine. Leaflet, pp. 8. 14. Ueber die Wirkung des Euphthalmins auf das Auge, von J. Woskressensky. Reprinted from der Wochenschrift für Therapie und Hygiene des Auges. Leaflet, pp. 6.

Wm. R. Warner & Co.—Philadelphia. The history of sugar-coated pills. Pamphlet, pp. 12.

# Pharmaceutical Review.

VOLUME 18. FEBRUARY, 1900. NUMBER 2.

## Retrospect: Pharmacopœial Revision.

During the past year much has been written and said about the British Pharmacopœia. It is not at all necessary to compare this work with like products of other nations, nor is it necessary to claim that the text of the British Pharmacopœia, as far as it goes, is not up to date, in order to be justified in stating that all that has been said and written was in reality a great ado about little.

During the same period of a twelve month much has also been said and written about the new edition of our own national standard. The real question is not whether the 8th edition of the United States Pharmacopœia is going to be a trifle better or worse than the British or any other pharmacopœia that has recently been revised or is about to undergo revision, but whether it is going to meet the actual demands of the first few years of the twentieth century. In other words, whether from the very day that it is published the next United States Pharmacopœia is going to be a scientific fossil or a live treatise which both physician and pharmacist can and actually will use.

Let it be understood that the above language is in no way disrespectful to our cherished standard. Neither has the writer the inclination to cast any reflection upon the members of the present Revision Committee. They have done the work assigned to them by the National Convention of 1890 not only in an able manner but also mostly in a spirit of unselfishness that should prevent any unfriendly criticism at the very outset.

Most of the earliest pharmacopœias, or works classed historically with this category of medico-pharmaceutical treatises, were written as a guide for physicians and apothecaries of a city or a small

province. It was a comparatively easy matter, therefore, to include in such works everything that was of any importance whatever. If we follow the development of pharmacopœias, we become aware that, especially in this century, we have more and more gotten away from the old standard. So much so has this been the case in recent decades that the pharmacopœia has become to some an evil, forced upon them by a government; to others a fetish to be worshiped. To most physicians and pharmacists pharmacopœias have become a byword. This is by no means stating the case too strong. Professor von Leyden of Berlin has stated that the German physician gets his information about the medical material he prescribes, not from the "Arzneibuch," but from circulars of chemical manufacturers. C. Glücksmann has pointed out the fact that the Austrian Pharmacopœia is primarily not a codex, but a scientific treatise; that with the present traditional form of revision as a codex, the pharmacopœia stands largely for that which has had time to crystallize, rather than for that which is live at present. It, therefore, ceases to be an up-to-date scientific work. In our own country the situation is not an iota better. The words recently uttered by Dr. Rice, who has so ably served as chairman of two revision committees for the past twenty years, should be heeded when he says that the Pharmacopœia might just as well remain unrevised if not at least several fundamental changes are made.

During the past year we have been discussing the advisability of extending the principle of standardization, the "ethics" of recognizing in the Pharmacopœia a chemical if patented, the desirability of introducing doses, maximum or average, whether such a drug or preparation is to be admitted to the pharmacopœia or not, or whether another is to be rejected or not, and numerous other questions of like import. The writer has no desire to belittle any of these problems, but do they not each and every one of them appear small, even insignificant when compared with the fundamental problem, whether the United States Pharmacopœia is to continue primarily a codex, which is of comparatively little use to the physician if not to the pharmacist, or is to be converted into a modern scientific treatise that may be made a boon to both the pharmaceutical and medical professions.

Though not a governmental publication, the U. S. P. enjoys the recognition of the legal courts. It is true it stands foremost in the

list of standards recognized by the courts, but do not the very laws, recognizing it as such, stand as a reproach against its exceeding limitations and consequent small field of usefulness?

Indeed if one stops to consider that so many physicians have ceased to prescribe the preparations of the pharmacopœia, but the corresponding preparations of manufacturer so and so, that much of their medical armamentarium consist of well defined compounds, and of galenical preparations not at all contained in the pharmacopœia, we may well stop to reflect how small the territory has become over which the pharmacopœia still rules as sovereign. Worse still, has the pharmacist who stands by his pharmacopœia through thick and thin—that is at association meetings—but who, when at home, never takes the trouble to apply its directions to actual practice; has he reflected that if he lived up to the requirements of his standard, he or the manufacturer would be compelled to tamper with the purity of natural products prepared according to the latest scientific methods?

Now, if the Pharmacopœia has failed in all countries as a codex why not make it a modern scientific guide such as both the busy pharmacist and the physician need and are craving for? Why not supply the physician with information that is less biased and more authoritative than that of the manufacturer? Why make the pharmacist so largely dependent on his journals which are of necessity hastily compiled?

How any thinking pharmacist or physician can continue in his "surprise" that the Pharmacopœia as such is so little used is a mystery to the writer. Other people are shrewder. Last September the publishers of the U. S. Dispensatory announced the eighteenth edition of this work in words that ought to put to shame all academic argument on this question at the Convention next May. We quote the following: "The new edition demanded enormous editorial labor, not only on account of the appearance of the new British Pharmacopœia, but mainly on account of the vast increase in synthetic remedies. The doctor or druggist of to-day has not only to be informed upon official remedies, but he is hopelessly out of the race who does not know about the new synthetics, their doses, mode of preparation, properties and uses."

A medical member of the present Committee of Revision states that what the physicians need is "to be able to look to some dis-

interested source for information on the enormous number of new remedies—good, bad and indifferent, honest and fraudulent—which are constantly thrust before them in advertisements and specimens, and in regard to which it is almost impossible that they should independently inform themselves." He also puts in a plea for average doses and the best forms of administration.

The ideal pharmacopœia is an up-to-date treatise that contains concise information with regard to every drug and preparation the modern physician may want to prescribe and which the pharmacist is called upon to dispense; not only of those which are regarded as "sufficiently important to be made official."

The ideal pharmacopœia is one that changes with every step of scientific progress, the change to be made as rapidly as is consistent with good work and in doubtful cases with the best judgment of the Revision Committee. It is not at all necessary to revise the entire book each year or oftener. The new revised edition being published, the committee should issue circulars with regard to changes or additions to be made. These could either be inserted into the book, so bound as to provide for such additions or changes; or at the end of each year an addendum could by issued comprising all of the information of the circulars. Whenever demanded, a new revised edition could be issued. There is no reason why pharmacopeias should not be completely revised as often as our present dispensatories.

## Medicinal Plants of Mexico.*

By *J. N. Rose.*

In presenting these notes upon the plants which are employed in one way or another by the Mexicans I wish them to be understood as chiefly a record of my own observations. A more formal and complete treatise is already in preparation by the Mexican Government, by whom it naturally should be done, but it is hoped that this paper may be of assistance in supplementing that work. My observations, in many cases meager and incomplete, were made while traveling in Mexico in 1897. I have drawn little upon published

* Extract from the "Contributions from the U. S. National Herbarium," Vol. 5, No. 4.

statements, contenting myself with facts personally observed or with well-authenticated reports obtained from the Mexicans themselves. Many of my observations may, doubtless, have been previously made, but I was especially fortunate in obtaining and determining botanically a number of plants, which heretofore have been incorrectly named, or have been known only by their local names. An attempt was made in the case of each species to obtain both good botanical specimens and examples of the parts or products of the plant useful to man. That the results are not entirely satisfactory is partly owing to the shortness of my stay in any one place, which was usually but for a day or two, often only for the night.

To obtain the fullest information from the natives, and especially from the Indians of the Sierre Madre, one ought to spent considerable time among them. Naturally suspicious and shy, it is not surprising that one can not readily obtain information from them. But if one could live with them for a short time, treat them kindly, and gain their confidence, he could, with a free use of coppers and small silver change, soon have the contents of their homes and their knowledge at his disposal. One other hindrance to my work was a lack of equipment for a long inland journey. In one case I traveled nearly 600 miles on horseback, and of course could not carry many fleshy fruits, berries, or other bulky things.

The native plants used as medicines, or supposed to have medicinal properties, are legion. Many of these, doubtless, have little or no real value.

The country people and Indians seem to have but little knowledge of medicine, generally using teas made of bitter and strong-smelling herbs.

More or less superstition is associated with certain plants, and great stress is laid upon some superstitious practices, for instance, that of sticking certain seeds on the temples to cure headache.

Along the coast, Indian peddlers bring down from the mountains various seeds or dried herbs to sell, or these may be found in the little stores of the towns. Sometimes on the plaza one finds the "herb doctor" dealing out a paltry stock of medicines in cent packages.

Much of the material which I saw for sale was in the form of dried roots or leaves, and in such cases specimens were not taken unless I saw the material collected and could identify the plant botanically.

The uses of these plants as given below are as they were told me.

## FILICES.

**Adiantum capillus-veneris** L. CELANTILLO DE OJO DE AGUA.

At Colomas this plant is used as a tea to relieve colic, but at Colotlan is taken as a tea for amenorrhea. This furnishes a good example of the diverse uses plants are often put to. The dried fronds were for sale in the plaza at Colotlan. (EB No. 29.)

**Polypodium lanceolatum** L. LENGUA DE CERVO.

A tea made from the fronds of this fern is taken to cure the itch. The dried fronds were for sale in the plaza at Colotlan. (EB No. 27.)

## LILIACEAE.

**Aloe** sp. SAVILA.

The crushed leaves of this plant are used with oil in making a poultice to reduce swellings caused by venereal diseases. The plant was only seen about houses and towns where it had apparently been planted. My specimens came from La Paz. (Herb. No. 1303.)

## CHENOPODIACEAE.

**Chenopodium incisum** (L.) Poir. IPAZOTE DEL ZORILLO.

The skunk ipazote is a general medicine in use among the common people and supposed to have various virtues, being usually taken in the form of a tea, which is reported to cure colic, pneumonia, etc. (Herb. No. 3610 and EB No. 28.) My specimens were bought on the plaza at Colotlan, September, 1897.

## MAGNOLIACEAE.

**Magnolia** sp. CORPUS.

From the flowers a tea is made which is used to cure scorpion bites. The flowers are brought from trees which grow in the western foothills at an altitude of 3,000 to 3,500 feet.

## ANONACEAE.

**Anona** sp.

The bark of this plant is boiled in urine and used to kill the mange on all kinds of animals. (Herb. No. 1681.)

## LAURACEAE.

**Litsea glaucescens** H. B. K. var. LAUREL.

A tea made from the leaves of laurel is taken for colds. The plant is, however, more largely used as a flavoring. (Herb. No. 3436 and EB No. 63.)

## LEGUMINOSAE.

**Enterolobium cyclocarpum** Griseb. HUINECASTLE.

A sweet sirup is made from the bark of this tree, which is used in cases of colds, etc.

The bark is also used as a soap and in tanning. My specimen came from Colomas. (Herb. No. 1759.)

**Leucaena** sp. TEPAHUAJE.

The country people use the bark to harden their gums. My herbarium specimen was obtained at Colomas, July, 1896. (Herb. No. 1725. EB No. 124, pieces of bark as used by the people at Colomas.)

## ZYGOPHYLLACEAE.

**Covillea tridentata** (DC.) Vail. GOBERNADORA.

A sample of this plant, as sold at Acaponeta, was purchased of an Indian peddler at that place.

A tea made out of the leaves and branches is taken by women for pains in the womb, or the material, when fried in tallow, is used for rheumatism.

The specimen is said to have come from the mountains east of Acaponeta, but I saw no plants of it. (EB No. 76.)

## MELIACEAE.

**Swietenia humilis** (?) Zucc. FLOR DE VENODILLO.

The seeds of the "flor de venodillo," which means "little-deer flower," are made into a tea which is taken for pains in the chest. Seeds were being sold at Acaponeta by Indian peddlers, who stated that they came from the coast near Acaponeta. (EB No. 77, seeds as sold by peddlers.)

## EUPHORBIACEAE.

**Acalypha phleoides** (?) Cav. YERBA DEL CANCER.

The leaves and stems of this plant are made up into small bundles and dried. The leaves and flowers are crushed into a powder and applied to sores, etc. A tea is made from it and taken to cure itch. My specimens were purchased on the plaza at Colotlan, September, 1897. (EB No. 26.)

**Euphorbia** sp. YERBA DE COYOTE.

A tea is made from the dried plant which is supposed to relieve rheumatic pains. My specimen was purchased on the plaza at Colotlan, September, 1897. (EB No. 25.)

**Euphorbia** sp. YERBA DE GOLONDRINA.

This plant is a small Euphorbia said to have come from the high mountains east of Acaponeta. (Herb. No. 1520 and EB No. 122.)

It is boiled and used as a poultice to reduce swellings and cure sores.

**Jatropha curcas** L. SANGRE GRADO.

The plant is found in great quantities about fields. It is said to be used as a purgative, the seeds (physic nuts) being doubtless, as elsewhere, the part used.

### RHAMNACEAE.

**Karwinskia humboldtiana** Zucc. MARGARITA.

The leaves of this plant are crushed and soaked in water and the cold infusion used in cases of fevèrs. It has a wide use in Mexico. My botanical specimens came from Colomas, but the plant has a wide distribution. (Herb. No. 3264.)

### MALVACEAE.

**Anoda hastata** Cav. ALTEA.

The leaves of this plant mixed with olive oil are taken for inflammation of the stomach. My specimens came from near Plateado, August 31, 1897. (Herb. No. 2709.)

### TURNERACEAE.

**Turnera humifusa** (Presl) Endlich. DAMIANA.

As is well known, this plant is widely used in Mexico. At Acaponeta I obtained medical specimens which had been brought from La Noria, above Mazatlan. It is here used as a tea, and taken to relieve pains in the stomach and bowels. My specimens were purchased of Indian peddlers of Acaponeta, August 2, 1897. (EB No. 120.)

### POLEMONIACEAE.

**Loeselia coccinea** Don. ESPINOCILLA.

The specimens were purchased at Acaponeta, and were said to have come from the mountains east of Acaponeta. From the leaves and stems an infusion or tea is made, which is taken to stop fevers. (EB No. 121.)

**Loeselia** sp. HINSESELI.

A tea is made of the leaves, which is used in fever and ague, while a cold infusion is used as a purgative.

### VERBENACEAE.

**Lantana** sp. MAJORANA.

This is said to be much used to relieve indigestion. My specimen came from Plateado, September, 1897. (EB No. 119.)

**Lantana** sp. SONORITA.

The leaves of this plant, when boiled with barley, are given to women in childbirth.

## LABIATAE.

**Marrubium vulgare** L. MARRUBIO.

A preparation made from the leaves of this is used for rheumatism. It is also added to mescal and applied as liniment for rheumatism. My specimens (EB No. 116) came from Plateado.

## SOLANACEAE.

**Datura tatula** L. TOLOACHI.

This plant is reputed to have many medicinal virtues.

An unguent is made from the leaves by boiling the juice of the crushed leaves with tobacco and lard. The seeds are ground and used in the same way.

My specimen was obtained at Plateado, where the species grows common in waste places about houses. Collected September 2, 1897. (Herb. No. 2775; EB No. 37.)

## BIGNONIACEAE.

**Pithecoctenium** sp. BEJUCO DE HUICO.

The large, winged seeds of this plant are applied to the temples, and are supposed to cure headaches.

The same use is made of rose leaves and also of a paste made from the vanilla bean. My specimens came from Colomas, July, 1897. (Herb. No. 1696; EB No. 123.)

## COMPOSITAE.

**Hieracium** sp. LECHUGUILLA.

Small bundles of the green plant are for sale in the markets. From it is made an infusion which is used as a wash for sores and skin diseases. It is also applied as a powder. My specimens were obtained in the market at Colotlan, September, 1897. (Herb. No. 2680; EB No. 30.)

**Piqueria trinervia** Cav.? TABARDILLO.

The crushed leaves are made into an infusion and taken as a remedy for typhoid fever. It is also said to be used to relieve deafness caused by typhoid fever. My specimens came from Plateado. (EB No. 118.)

**Tagetes lucida** Cav. YERBA NIL.

This is one of the most widely used medicinal plants of western Mexico. The species has a wide distribution. The plants gathered by the country people are made up into small bundles and dried, and then put away for use. It is made into a tea, and is supposed to have numerous virtues, including efficacy against scorpion bites, fever and ague, etc.

Dr. Palmer says that at Colima it is made into an insect powder. This is the same plant as the "Santa Maria" of the Cora Indians. My specimens were obtained at Colotlan and Plateado, September, 1897. (EB Nos. 24, 117.)

**Zinnia linearis** Benth. YERBA DE TORRO.

This plant is very common on the table-lands of Jalisco. The plants are broken off or pulled up by the roots and dried in small bundles, in which state they may be seen on the walls of the Mexican's hut. A tea is made from these dry stems, which is taken for pains in the stomach. My specimens were bought at a small ranch, one day's journey south of Bolaños, September 20, 1897. (Herb. No. 3079; EB No. 78.)

——— MANZANILLA.

The leaves are made into a tea and taken with olive oil for colic. With alcohol added the tea is given for nervousness.

# Folk-Medicine in America.

By *Rodney H. True.*

We are accustomed to think of our own time as far removed from the days of witches and the evil eye and other superstitions of a like nature. It might easily be supposed that the pharmacopœia and schools of pharmacy and great annual conventions in the cause of pharmaceutical and medical science had made impossible any survival of the filth cures of former centuries. A very little probing into the folk-lore of the people in almost any state in the Union will discover, nevertheless, a veritable quagmire of ignorance and credulity in medical matters. A short article by Dr. G. W. Morehouse in the Boston Medical and Surgical Journal of February, 1898, on "Bits of Medical Folk-Lore" gives briefly some of the most unsavory beliefs and practices that are still in a measure prevalent among us, and a recent work by Mrs. Fanny D. Bergen (author of "Current Superstitions") entitled "Animal and Plant Lore" and published by Houghton and Mifflin for the American Folk-Lore Society, contains two very interesting, if sadly instructive, chapters on "Folk-Medicine." Of these two chapters the one concerning "Animal Lore" is the richest, and a few instances will serve to give an idea of the interesting data it furnishes.

"Swallowing a live head-louse, without the knowledge of the patient, will cure the jaundice." (From Marshall Co., Ind., and Chicago, Ill.

"Biting into a live black snake will insure sound teeth for the one who bites it." (General in the United States.)

"To bite into a living black snake will cure the toothache." (Eastern Massachusetts.)

"A freshly killed chicken if applied to a snake-bite, will cure it." (Illinois, Michigan and Missouri.)

"Goose manure is supposed by some people to cure pimples on the face." (Walnut, Ind.)

"A sty may be cured by rubbing it with a black cat's tail." (Alabama.)

"If you have asthma, save all the nail parings of your hands and feet for a year. At the end of that time find an ash-tree of the same age as yourself, bore a hole in it, put in the parings and plug up the hole." (Rhode Island.)

In the chapter on folk-medicine in "Plant-Lore" we find among the many reputed remedies the following:

"A mullein leaf is good for a parrot's bite." (From Brookline, Mass.)

"Any three leaves (of different kinds) will cure the sting of a wasp or bee." (Northern Ohio.)

"Picking the teeth with a splinter from a tree struck by lightning will prevent toothache." (Narlwa, N. H.)

In some cases this raw empiricism seems to have some possible foundation in fact. In view of the recent demonstration of poisonous bodies in eel's blood, and the probability of similar substances in the blood of other animals, the persistent belief in all parts of the country that the blood of the cat is efficacious against shingles and ringworm, caused probably by external parasitic growths, may not be wholly wrong. The wide use of all parts of the elder plant, *Sambucus* sp., in various troubles is probably likewise supported by some genuine properties of this bush. It would be difficult, however, to explain the grounds for the belief, reported from Ohio, that tea made from elder bark removed by scraping upward will act as an emetic, whereas if the bark be scraped downward the tea will have cathartic properties.

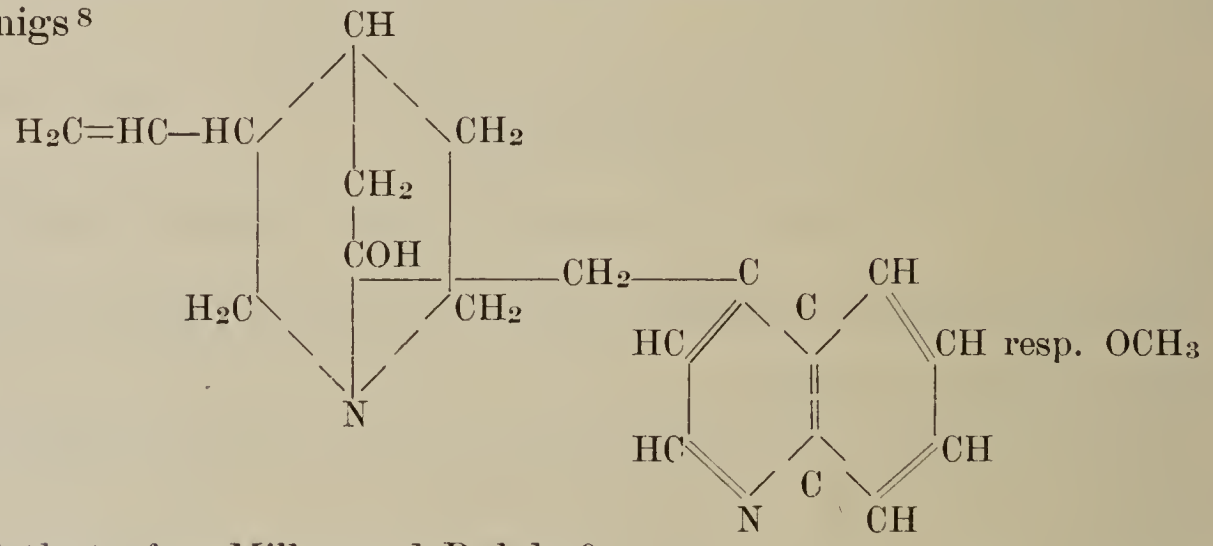
It has occurred to the writer that very great service might be done in the interest of folk-lore by a very little care and trouble on the part of students of medicine and pharmacy. If those data which come to the knowledge of every one of us were collected and published or sent to the American Folk-Lore Society, or to Mrs. Bergen, for publication, large additions to our knowledge in these directions might be made in a short time.

Cambridge, Mass.

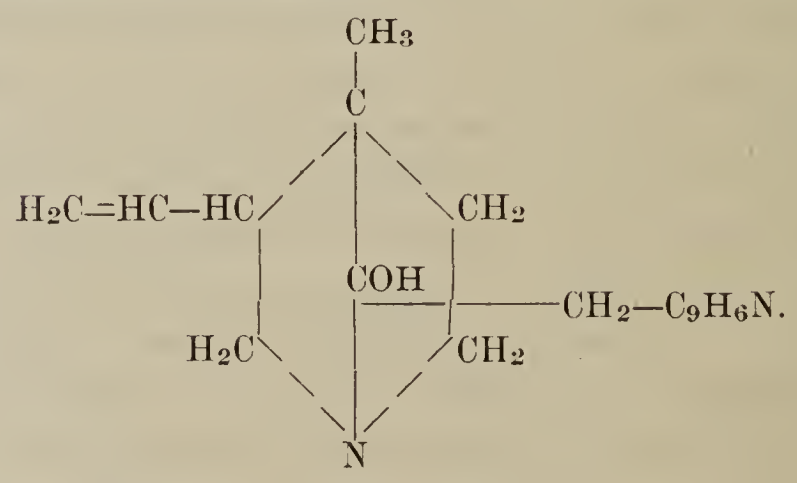
## Notes on Modern Alkaloid Investigations.*

The formulas for quinine and cinchonine have not yet been definitely determined and all their reactions are not readily understood It is however certain that quinine contains one methoxy group more than cinchonine, and is therefore a methoxycinchonine.

At present two quinine formulas are under discussion, that of Königs[8]




and that of v. Miller and Rohde.[9]

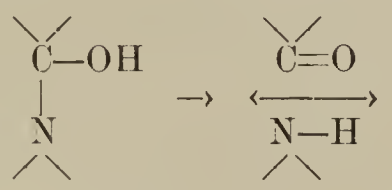



* Continued from page 18.

[8] W. Königs. Ber. d. Deutsch. chem. Ges., 28, p. 3150. Ueber einige Dikarbonsäuren von Piperidinbasen.

[9] W. v. Miller und Rohde, Zur Konstitution des Cinchonins. Ber. d. Deutsch. chem. Ges., 28, p. 1056.

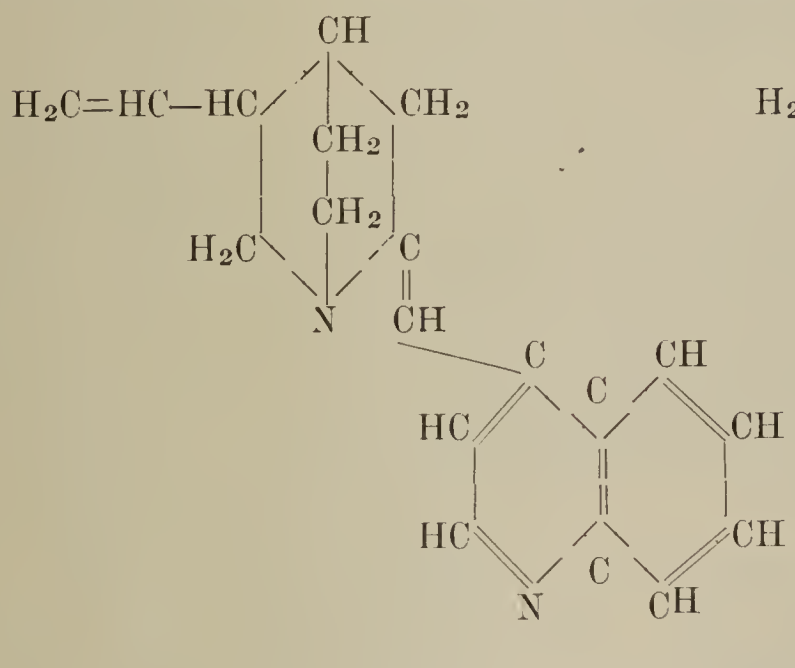
These alkaloids are split up in two characteristic ways. Von Miller and Rohde obtained from cinchonine by boiling with dilute acetic acid an isomeric base, in which the carbon atom, which is connected with the hydroxyl and neighboring to the nitrogen, yields a ketone group with the simultaneous formation of an imido group.

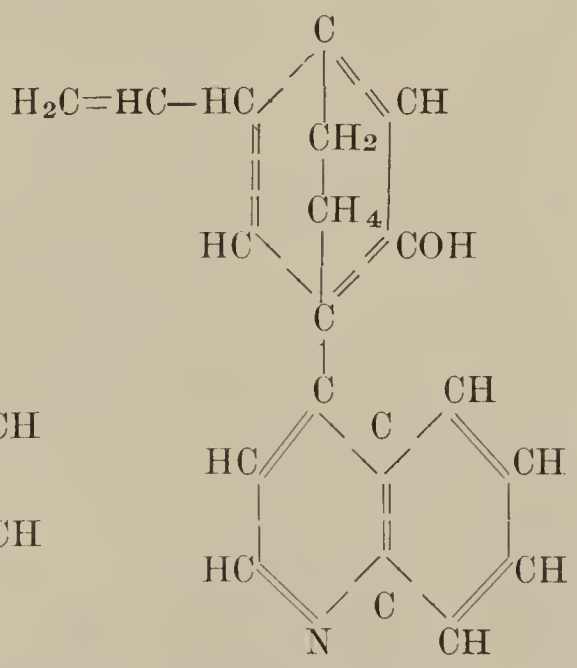


The compound formed, cinchotoxine, is very poisonous but no longer possesses any antipyretic properties.

The second way of splitting up these alkaloids, the so-called "Teninspaltung" according to Skraup, attacks the vinyl group which is probably present. This is split up by moderate oxidation into carboxyl and formic acid. The resulting body, cinchotenine, is a saturated base, which is still capable of undergoing the "Toxin-spaltung."

Koenigs was successful in splitting off water from chinchonine by means of phosphorus pentachloride and subsequent boiling with caustic potash. One molecule of water steps out and from cinchonine results cinchene, analogously from quinine, quinene.





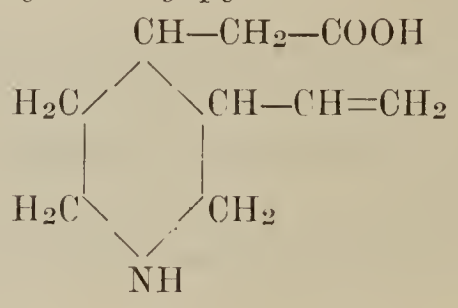
Cinchene is converted by heating with concentrated hydrobromic or hydrochloric acid to 190°, by splitting off ammonia and taking up water, into apocinchene.

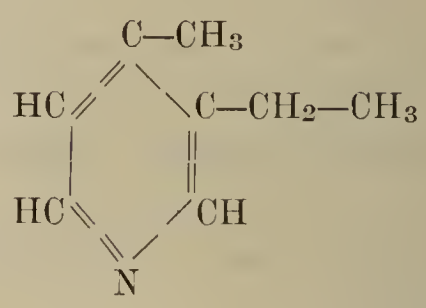
This is a phenol, soluble in alkali from which it can be again precipitated by carbonic acid.

The formation of the benzol ring can only be explained by assuming with v. Miller and Rohde[10] that "das γ-Methyl bei der Ausbildung des Apocinchens am Aufbau des entstehenden Benzolringes unter Eingliederung betheiligt." In this case the formula of Koenigs is therefore to be preferred.

By means of phosphoric acid there is produced from cinchene besides lepidine (γ-methyl chinoline) meroquinene, an acid, to which Koenigs has assigned the following constitutional formula.

In contradiction to this formula is the easy conversion of meroquinene by means of hydrochloric acid and chloride of mercury into γ-methyl-β-ethylpyridine.




This reaction is more readily understood with the formula of v. Miller-Rohde.

(To be continued.)

## Arrangement and Fitting of Drug Stores.*

Attention has previously been called to the fact that the plans and sketches reproduced in figures two,[1] three,[2] five,[2] six[3] and seven[3] of this series are primarily intended for suggestiveness.[4] Although the plans are scarcely adapted to the average American drug store, they will prove full of suggestions to the careful student. The American pharmacist who is trying to work out his salvation along lines of professional service and who makes his former store subordinate to his prescription room, laboratory and stock rooms, will also find suggestions of value in the sketches so far presented. Though several pharmacists have ventured to discard the former store feature altogether, some of the most successful in this new

[10] W. v. Miller u. Rhode. Ber. 28, 1060.
* Continued from page 22.
[1] This journal, Nov. 1899, p. 513.
[2] ibidem Dec. 1899, pp. 361 and 363.
[3] do. Jan. 1900, pp. 19 and 21.
[4] Reprints of the plans and sketches in accordance with the Gothic, Renaissance, Baroque, Rococo, Empire and English styles on heavy glazed paper can be had upon application to this journal.

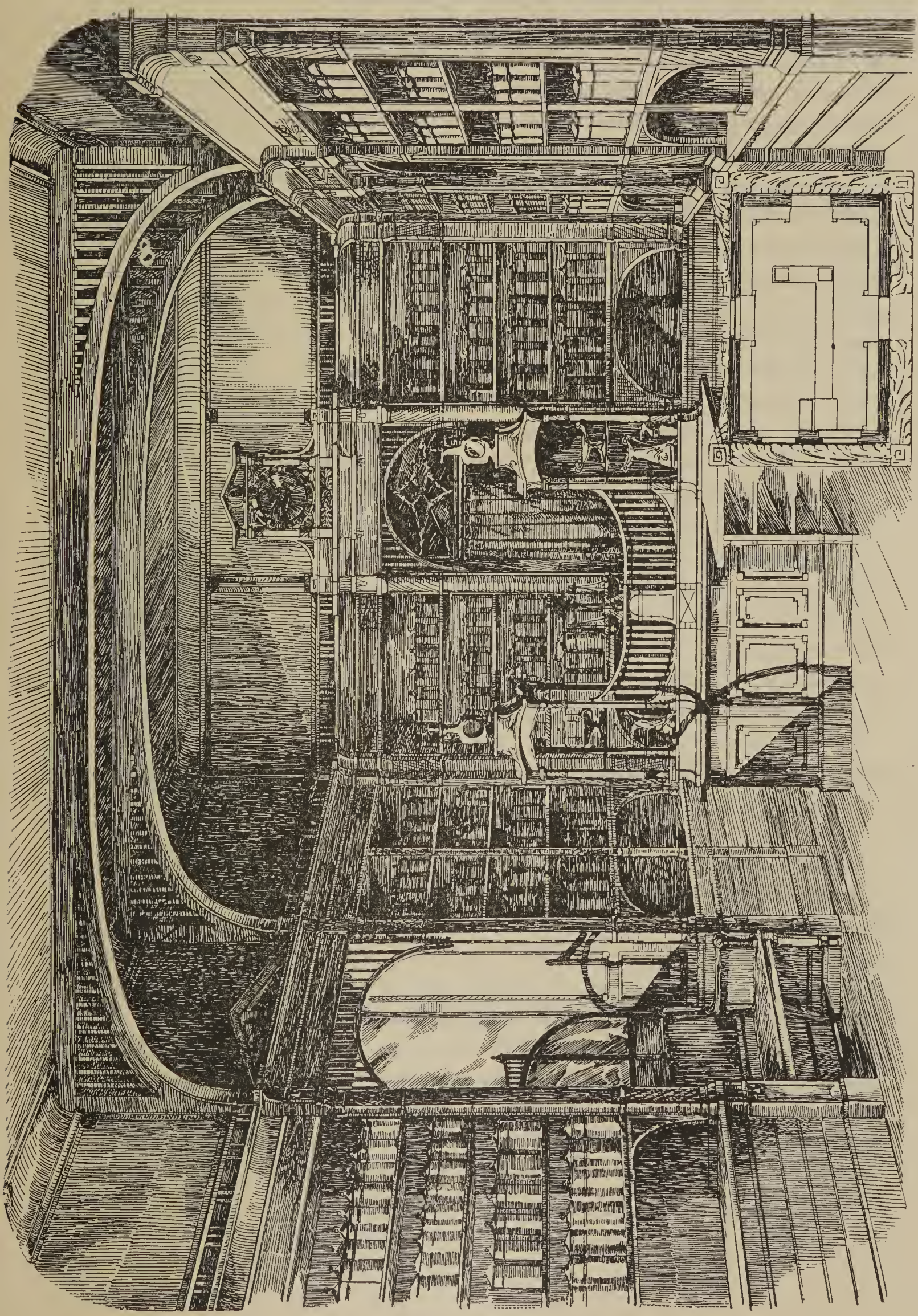


**Fig. 8. Equipment of a pharmacy in accordance with the English style.**
Designed by the "Hof-Moebelfabrik" of Franz Schneider in Leipzig.

movement have adhered to this feature, because it seems necessary as a means of letting people know that the place is still a pharmacy. To such especially, who convert their former stores largely into attractive waiting rooms, these plans and sketches should prove extremely valuable.

The sketch presented in Fig. 8, which shows the arrangement and equipment of a drug store designed in what is called the English style, comes much closer to modern American designs. It contains elements of both the Gothic and Renaissance styles. The floor plan of the store differs also materially from that of the other styles previously presented in being much longer than wide, and in this particular more closely approaches our modern American store. Whereas in the earlier designs the prescription counter was either at the side or open like our counters, the prescription counter in Fig. 8 is to the rear, and shows an attempt at least to keep away a curious public. Attention should be especially called to the provision for ample light on the precription counter made in all of the designs. In this particular almost all American stores are sadly deficient. It is suggested that whereas mahogany or an imitation of mahogany would produce an elegant effect, plain an natural oak would be in perfect keeping with the design. To call further attention to details of arrangement and equipment seems superfluous, for these will become apparent to any close observer who studies the sketch and plan.

## The Oils of the Pharmacy of the Hospital of St. Nicolas of Metz in the Year 1509.

In the treatise on volatile oils by Doctors Gildemeister and Hoffmann, the latter calls attention to the term "distilled" as used during the middle ages and later.[1] It is pointed out that the term applies to other processes of isolation and purification as well as to distillation as understood at present. As a result, it is difficult, at times, to learn whether e. g. a socalled distilled oil was a volatile oil or an aromatized fatty one. The literature consulted by Dr. Hoffmann in his very valuable researches on this subject is largely German. In addition to the pharmacopœial writings and "Destillirbücher", the municipal price ordinances of several German cities supplied much material for his very interesting sketch of the history of volatile oils.

[1] G. & H., Die ätherischen Oele, p. 39. J. Springer, Berlin.

In as much as the volatile oil industry seems to have developed at an early date in France[2], any information from French sources on this subject should prove welcome. Following the example of the late Professor Flückiger who published "Die Frankfurter Liste" and similar documents of great historic value[3], Dr. Paul Dorveaux, Librarian of the Superior School of Pharmacy of Paris, in 1894 published the "Inventaire de la Pharmacie de l' Hopital St. Nicolas de Metz (27. Juin 1509)".[4] In addition to a large number of distilled waters (Nos. 321 to 405), the inventory enumerates oils (Nos. 587—642), giving data as to the amount of most of them kept in stock and as to the value of many. The list of oils, with Dr. Dorveaux' comments, is herewith reproduced.

587. Oleum nucis muscate.....xij sols l'once.
588. — absinthii.....vj livres.
589. — nardinum.....ij livres.....ij sols l'once.
590. — rosarum.....xv livres.
591. — anetinum.....iiij livres.
592. — violarum.....viij livres.
593. — de Kayry.....ij livres.
594. — mente.....ij livres.
595. — camomille.....xij livres.
596. — masticis.....ij sols l'once.
597. — costinum.....iij livres.....xij deniers l'once.
598. — petroleum.....j livre demy.....iij sols l'once.
599. — nenufaris.....j livre.
600. — amygdalarum dulcium.....demy livre.....ij sols l'once.

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587. Huile de noix muscade. On trouve dans Mésué la recette de cette huile et de presque toutes les suivantes.
588. — d'absinthe.
589. — de nard indien ou spicanard. (V. n° 68.)
590. — rosat.
591. — d'aneth.
592. — de violettes.
593. — de giroflée jaune ou violier jaune, *Cheiranthus Cheiri* L. (reparaît au n° 642). *Kayry*, *Keyry*, ou mieux *Khîri* est le nom arabe de la giroflée.
594. — de menthe.
595. — de camomille.
596. — de mastic.
597. — de costus.
598. — de pétrole.
599. — de nénuphar. (Reparaît au n° 631.)
600. — d'amandes douces.

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2 Ibidem, p. 51.
3 Archiv der Pharmacie, 1872, 1875 and 1876.
4 Paris, H. Welter, Librairie.

601. Oleum muscacelenum .....j livre .....vj sols l'once.
602. — benedictum.....demi livre.....iiij sols l'once.
603. — formicarum .....i livre .....xij deniers l'once.
604. — capparum.....i quarteron.
605. — de spica.....demi livre.....iij sols l'once.
606. — terebentine.....demi livre.....iiij sols l'once.
607. — tartari.....j livre.....iij sols l'once.
608. — enulatum .....demi livre.
609. — scorpionum .....i quarteron .....iij sols l'once.
610. — lumbricorum .....ij livres.....xij deniers l'once.
611. — liliorum .....vj livres.
612. — amygdalarum amararum.....j livre .....ij sols l'once.
613. — de piperibus .....j livre .....xij deniers l'once.
614. — euforbii.....xij deniers l'once.
615. — sansuci.
616. — mandragore.....j livre .....ij sols l'once.
617. — papaveris.
618. — mirtillorum ..... .....livre j .....xij deniers l'once.
619. — anthos.
620. — jusquiami .....livre j.
621. — basiliconis.....j livre.
622. — ovorum .....v sols l'once.

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601. Huile musquée. Il entrait dans cette huile aromatique du musc et de la noix muscade.
602. — de ben. *Oleum benedictum* est sans doute mis ici pour *oleum de ben* (*Ben*, ou mieux *Bân*, est le nom arabe du *Moringa aptera*, Gaertner). car, d'après Mésué, l'*oleum benedictum* n'est autre que l'huile de camomille, déjà citée au n° 595.
603. — de fourmis. (Reparaît au n° 640.)
604. — de câpres.
605. — d'aspic, *Lavandula spica* L.
606. — de térébenthine.
607. — de tartre.
608. — de racine d'aunée.
609. — de scorpions.
610. — de lombrics.
611. — de fleurs de lis.
612. — d'amandes amères.
613. — des 3 poivres. (Reparaît au n° 634.)
614. — d'euphorbe.
615. — de marjolaine.
616. — de mandragore.
617. — de pavot.
618. — de myrtilles.
619. — de fleurs de romarin.
620. — de jusquiame.
621. — de basilic.
622. — d'œufs, extraite des jaunes d'œufs.

623. Oleum lini.....j livre.
624. — persicorum.
625. — yrinum.
626. — piretri.....xij deniers l'once.
627. — rute.....demi livre.
628. — sinapis.....j quarteron.
629. — pimenti.....ij livres.
630. — vulpinum.....vj livres.....xij deniers l'once.
631. — nenufaris.....ij livres.
632. — sambuci.....iij livres.
633. — citoniorum.....j livre.
634. — de piperibus.....iiij onces.....xij deniers l'once.
635. — castoris.....livre j.....xij deniers l'once.
636. — de seminibus.....livre j.....xij deniers l'once.
637. — juniperi.....livre j.....iij sols l'once.
638. — petroselini.....j livre demy.

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623. Huile de lin.
624. — de noyaux de pêches.
625. — d'iris.
626. — de pirèthre.
627. — de rue.
628. — de moutarde.
629. Le piment (*Pimenta officinalis* Lindley) étant originaire d'Amérique, il ne peut être question ici, vu la date de notre inventaire, de l'*Oleum pimentae* des pharmacopées du siècle dernier. D'un autre côté, on ne trouve dans les ouvrages de pharmacie publiés à la fin du XVe siècle (Mésué, Nicolaus Myrepsus, Nicolaus Præpositus, Saladinus de Asculo, Quiricus de Augustis, etc.) aucune drogue portant le nom d'*oleum pimenti* ou *pimentatum*, Jean de Ruel, qui fut doyen de la Faculté de médecine de Paris de 1508 à 1510, nous apprend (Ruellius, *De natura stirpium*, Paris, 1536, p. 741, l. 42) que de son temps, le botrys vulgaire (*Chenopodium Botrys* L.) s'appelait communenément *piment*. Ce nom est encore donné comme synonyme de botrys dans *Les six livres de Pedacion Dioscoride d'Anazarbe de la matière médicinale translatez de latin en françois* (par Martin Mathée). Lyon, 1553, p. 225, col. 1: dans l'*Histoire générale des plantes*, de J. Dalechamp "faite françoise par Me. Jean des Moulins" (Lyon, 1653, t. I, p. 829), et dans d'autres ouvrages analogues. Outre le botrys vulgaire, la mélisse des jardins (*Melissa officinalis* L.) portait également le nom de *piment*. D'après Geoffroy, Valmont de Bomare, Mérat et de Lens, etc., elle s'appelait *piment des rûches ou des mouches à miel*.
630. Huile de renard. Bauderon donne tout au long la recette de cette huile, très efficace, paraît-il, contre la goutte et le rhumatisme.
631. — de nénuphar. (V. n° 599.)
632. — de fleurs de sureau.
633. — de coings.
634. — des 3 poivres. (V. n° 613.)
635. — de castoréum, de Nicolaus.
636. — des quatres semences froides: melon, concombre, courge et pastèque. (V. n° 252.)
637. — de baies de genièvre.
638. — de persil.

639. Oleum serpentarie.....j livre.
640. — formicarum.....j livre.....xij deniers l'once.
641. — melliloti.....livres viij.
642. — Keyry.....vj livres.

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639. Huile de serpentaire. (V. n° 188). Il y avait aussi une huile de serpents, *oleum de serpentibus*, de Mésué.
640. — de fourmis. (V. n° 603.)
641. — de mélilot.
642. — de giroflée jaune. (V. n° 593.)

A casual glance at the above list reveals the fact that at least several classes of products are enumerated under the same category. Thus *Oleum amygdalarum dulcium* is unquestionably a fatty oil; *Oleum petroleum* a mineral product; *Oleum rosarum* an aromatized fat; *Oleum tartari* possibly deliquesced potassium carbonate; and finally *Oleum terebentine* in all probability a volatile oil. Judging from quantities and prices, which must be regarded as a valuable criterion in this case, it would seem that turpentine oil is possibly the only true volatile oil in the list, unless *Oleum juniperi* (No. 637) may be considered as such.

## Popular German Names of Domestic Drugs and Medicines.*

By *Fr. Hoffmann.*

Spandeersalbe } *Ungt. flavum.,Ungt.*
Spaltersalbe } *rosmar. comp.*
Spangrün—*Aerugo.*
Spanierpulver—*Borax pulv.*
Spanische Fliege } *Empl. cantharid.*
Spanische Mücken }
" " immerwährende—*Empl. canth. perp.*
Spanische Seife—*Sapo venetus.*
Spanischer Hafer—*Pulv. pediculorum*
Spanischer Hopfen — *Herb. origani crctic.*
" Kreuzthee—*Herb. galeopsidis.*
" Pfeffer—*Fruct. capsici annui.*
" Saft—*Succ. liquiritiae.*
Spanisch-Glas—*Glacies mariae.*
" Hopfenöl—*Ol. origani cretici. (Ol. cajeputi).*
" kornpulver — *Pulv. pedicolor.*
" Rütersalv — *Ungt. pedicolorum.*
Spathsalbe—*Ungt. cantharid. veterin·*
Speckgummi—*Resina elastica.* [*ar.*
Speckòl—*Ol. spicae.*
Speckstein—*Talcum.*
Spei—*Rad. valerianae.*
Speichelwurzel—*Rad. pyrethri.*
Speimiezel—*Herb. trifolii arvens.*
Speisekümmel—*Fruct. carvi.*
Speiseöl—*Ol. olivarum.*

* Continued from p. 31.

Spektakelpflaster—*Empl. plumbi simpl., Empl. saponat.*
Spermacet—*Cetaceum.*
Sper-Blumen—*Flor. lavandulae.*
Spickernalienöl, Spieknardenöl, Spieknervenöl } *Ol. spicae.*
Spiegelsaat—*Fruct. foeniculi.*
Spicke, Spickblumen, Spickatblüthe } *Flor. lavandulae.*
Spickeröl, Spiköl } *Ol. spicae (Ol. terebinth.)*
Spiessglanz—*Antimonium crud.*
Spiessglanzleber—*Hepar antimonii.*
Spiessglanzöl—*Liq. stibii chloridi.*
Spiessglas—*Antimonium crudum.*
Spiessglasbutter—*Liq. stibii chloridi.*
Spiraltropfen—*Acid. muriatic. dilut.*
Spiritus ablitus—*Spir. angelic. comp.*
" apopletic.—*Spir. odoratus.*
" dulcis—*Spir. aeth. nitrosi.*
" fliegender, flüchtiger } *Liq. ammon caust.*
" nitri—*Acid. nitricum* (!).
" " dulcis—*Spir. nitr. acther.*
" salis — *Acid. muriat. dil.*, auch *Liq. ammon. caust.* (!)
" " dulcis—*Spir. nitr. aether.*
" saturni—*Acet. plumbi.*
" Verbind—*Ol. terebinth.*
Spitz—*Spir. lavandulae, oder Ol. spicae.*
Spitzbubenessig—*Acet aromatic.*
Spitze Lenore—*Spec. lignorum.*
Spitzglas—*Stib. sulfurat. nigr.*
Spitzwegerich—*Herb. plantaginis.*
Splittersalbe—*Ungt. flavum.*
Splittertropfen—*Ol. terebinth.*
Spodium—*Ebur ustum.*
Spörk'sches Pflaster—*Empl. canthar.*
Spröhpulver—*Lycopodium.* [*perp.*
Sprossöl—*Ol. lumbricor.*, (*Ol. lini*).
Stabwurzel—*Rad. ari.*
Stabwurzelkraut—*Herb. abrotani.*
Stachelkraut—*Herb. cardui bened.*
Stachwurzel—*Rad. taraxaci.*
Stärkemehl—*Amylum.*
Stärkungstropfen—*Tinct. amara.*
Staffadrian — *Sem. staphid. agriae*, (*Pulv. pediculor.*)
Stahlhärter—*Kalium ferro-cyanat.*
Stahlkugeln—*Globuli tartari ferrat.*
Stahlpulver, gelbes—*Ferr. oxyd. sacch. sol.*
" schwarzes—*Ferr. pulver.*
" weisses — *Ferr. lactic. c. sacch.*
Stahltropfen—*Tinct. ferri acet.*, *Tinct. ferri pomati*, *Tinct. ferri chlor. aeth.*
Stahlwein—*Vinum ferratum.*
Stangenpfeffer—*Piper longum.*
Staubwurzel—*Rad. imperatoriae.*
Stebmehl—*Lycopodium.*
Stechapfel—*Stramonium.*
Stechbeere — *Fruct. rhamni cathart-icae.*
Stechkörner—*Sem. cardui mariae.*
Stechlaub, Stechpalmenblätter } *Herb. ilicis.*
Stechsaat, Stechkörn } *Sem. cardui mariae.*
Steckflusspflaster, g. Schwämmchen—*Mel. boraxat.*
Stecknadelsamen—(*Sem. psyllii.*)
Steffenskörn, Steffkörn } *Sem. staphid. agriae*, (*Pulv. pediculorum.*)
Stein, weisser, göttlicher Augenstein—*Zinc. sulfur.*
Steinbeerenblätter—*Fol. uvae ursi.*
Steinblumen—*Flor. stoechados.*
Steinbrechwasser—*Aq. petroselini*, *Aq. tiliae.*
Steinessenz—*Elix. aurant. comp. Ph.*
Steinklee—*Herb. meliloti.* [*G.*
Steinmark—*Medulla saxorum*, (*Bolus armen.*)
Steinminje—*Herb. nepetae. cat.*
Steinnelke—*Flor. tunicae.*
Steinöl—*Ol. petrae.*

Steinpilzkugel—*Bolet. cervinus.*
Steinsalz—*Sal gemmae.*
Steinsamen—*Sem. lithospermi s. milii*
Steinthee—*Flor. stoechados.* [*solis.*
Steintinctur—*Tinct. lignorum.*
Steinwurzel—*Rad. polypodii.*
Stelzmarie—*Stincus marinus.*
Stempelienöl—(*Ol. lini.*)
Stengelsalbe—*Empl. plumbi comp.*
Stenzmarietropfen—*Tinct. aromatica.*
Stephanskörner } *Sem. staphid. agriae.*
Stephenskörner } (*Pulv. pediculor.*)
Stephenssalbe — *Ungt. c. scab. grise-*
Sternblumen—*Flor. arnicae.* [*um.*
Sternkraut—*Herb. veronicae.*
Stern- und Planetenbalsam — *Linim saponis.*
Sternsamen—*Fruct. anisi stell.*
Stichelkörner, Stichkörner, Stichkorn } *Sem. cardui mariae.*
Stichkraut—*Herb. arnicae.*
Stichpflaster—*Empl. oxycroceum.*
Stickwurzel — *Rad. bryoniae., Rad. arnicae.*
Stiefstandwurzel—*Rad. taraxaci.*
Stielpfeffer—*Cubebae.*
Stiefelknechttropfen—*Tinct. asaefoet.*
Stiefmütterchen—*Herb. violae tricol.*
Stierpulver, Stierbolus, Stierkugel — *Boletus cervinus.*
Stilltropfen—*Tinct. valerianae.*
Stinkasand—*Asafoetida.*
Stinkmarie—*Stincus marinus.*
Stiptikum—*Lycopodium.* (*Liq. ferri. chloridi!*)
Stockdohnstropfen (*Elix. Stougthon*) —*Tinct. chinae comp., Tinct. amara, Tinct. chinioidini.*
Stockdumm — *Tinct. chinae comp., Tinct. amara, Elix. ad long. vit.*
Stockfischkiemen—*Conchae praep.*
Stockrosen—*Flor. malvae arbor.*
Störgruss—*Cerussa* (*Zinc. oxyd. venale.* (!)
Stötte, stötten=gestossen, pulverisirt
Stoffsaat, Stoffsack } *Pulv. pediculorum.*
Stolzer Heinrich—(*Herb.chenopodii.*)
Stopfsloch, Stopparsch, Stoppkeert } *Herb. trifolii arvensis,* auch *Herb. solidaginis.*
Storaxsalbe—*Ungt. styracis.*
Storchensalbe, Storchschnabelfett } (*Adeps.*)
Streupulver — *Lycopodium, Talcum salicyl.*
Stricksalbe — *Ungt. hydrarg. ciner.*
Strizelpflaster—*Empl. plumbi.* [*dilut.*
Strohblumen—*Flor. stoechados.*
Stubkraut—*Herb. agrimoniae.*
Studentenblumen—*Flor. calendulae.*
Studentenpflaster — *Empl. fuscum.,*
Stüb—*Lycopodium.* [*Empl. meliloti*
Studentenpulver—*Pulv. pediculorum.*
Stumpenstoff—*Pulv. pediculorum.*
Stuppflaster—*Empl. plumbi comp.*
Stuppstein—*Talcum.*
Sturack—*Styrax calamita.*
Subsilientropfen—*Tinct. chinioidini.*
Suckpflaster—*Empl. plumbi comp.*
Suckulizsch—*Succ. liquiritiae.*
Sudensalbe, graue—*Ungt. contra scab.*
Sünnenthau—*Herb. rorellae.*
Sünnt Kathrinenöl—*Petroleum.*
Sünnt Peter—*Kali nitricum.*
Sünnt Peteröl—*Petroleum.*
Sueröl—*Acid sulfuricum* (!)
Süssholz—*Rad. liquiritiae.*
Süssöl—*Glycerin.*
Süsspect—*Succ. liquiritiae.*
Sulzberger Tropfen, Sulzbacher " } *Elixir. ad longam vitam.*
Superintendententropfen—*Tinct pimpinellae.*
Sympathietropfen—*Tinct. pimpinellae.*
Tabakwasser—*Aq. creosoti dil.*
Tabaksblüthen—*Flor. lavandulae.*
Tackemack—*Tacamahaca.*
Täschelkraut—*Herb. bursae past.*
Tafelbalsam, gelber—*Ungt. hydr. cit-*
Tafellack—*Lacca in tabulis.* [*rin.*

Tafelpflaster
Tafelsalbe, braune } *Empl. fuscum.*
" schwarze
" gelbe—*Cerat resinae pini.*
" gegen Krätze—*Ungt. hydrarg. citrin.*
Taggenkraut—*Herb. linariae, Herb. malvae.*
Taggensalbe—*Ungt. linariae, Ungt. rosmarin. comp.*
Tag und Nacht—*Tacamahaca.*
Tag- und Nachtblumen } *Herb. violae*
" " " veilchen } *tricol.*
Talg—*Sebum.*
Talkstein—*Talcum.*
Tamariskenessenz — *Tinct. myrrhae,* auch *Tinct. lignorum.*
Tankarellen—*Fruct. tamarindor.*
Tannapfelöl—*Ol. terebinthinae.*
Tannenknopsen } *Turiones pini.*
Tannenspitzen }
Tannenpech—*Pix alba.*
Tannesselthee—*Herb. galeopsid. grandifl.*
Tannzapfenöl—*Ol. therebinthinae.*
Tarant, blauer—*Herb. antirrhini coerulei (Herb. origani vulgar.)*
Tarpentillwurzel—*Rad. tormentillae.*
Taschendieb } *Herb. bursae pastoris.*
Taschenkraut }
Taschenpfeffer—*Pip. hispanicus.*
Taternöl—*Ol. animal. foetidum.*
Tatersalbe—*Ungt. flavum.*
Taubenkörbel—*Herb. fumariae.*
Taubenkraut—*Herb. verbenae off.*
Taubenwasser—*Aq. valerianae.*
Taubnesselblüthe—*Flor. lamii albi.*
Tausendgüldenkraut—*Herb. centaurii min.*
Tausendschön—*Herb. violae tricol., Flor. bellidis.*
Taxfett—*Adeps.*
Teegelsteenöl—*Ol. philosophorum.*
Temperirpulver—*Pulv. temperans.*
Templinöl—*Ol. terebinthinae, Ol. pumilionis.*
Tenakelpflaster—*Empl. plumbi comp.*
Terpantpflaster—*Empl. oxycroceum.*
Terpentingeist—*Ol. terebinthinae.*
Terpentinpflaster } *Terebinth.*
Terpentinsalbe } *communis.*
Terpentinschwefelbalsam — *Ol. terebinth. sulfur.*
Terpentinspiritus—*Ol. terebenthinae.*
Teufelsabbiss—*Rad. morsus diaboli.*
Teufelsdreck—*Asafoetida.*
Teufelsklaue—*Rad. filicis, Herb. lycopodii.*
Teufelskoth—*Asafoetida.*
Teufelsöl—*Ol. philosophorum.*
Thaunessel—*Flor. lamii albi.*
Theden's Wundwasser—*Mixt. vulneraria acida.*
Thee, Blankenheimer } *Herb.*
" Lieber'scher } *galeopsid.*
" Schweizer } *grandiflor.*
" Hamburger—*Spec. laxantes.*
Theer—*Pix liquida.*
Theerbandpflaster — *Empl. oxycroceum.*
Theerjacke—*Electuar. theriaca.*
Theeröl—*Pix liquida.*
Theerpflaster—*Empl. picis.*
Theerwasser—*Aq. picis.*
Theimiänche—*Herb. thymi.*
Theriak—*Electuar. theriaca.*
Theriakgeist—*Spir. angelicae comp.*
Theriakwurzel — *Rad. pimpinellae, Rad. valerianae.*
Thieröl (stinkendes)—*Ol. animale foetid.*
Thierkohle—*Ebur ustum.*
Thimotheus, grauer—*Stibium sulf. nigr.*
Thon, weisser—*Bolus alba.*
Thu mir nichts—*Ungt. sulfurat. comp*
" " " -Pulver—(*?Stib. sulf. nigr., Pulv. pediculor.*)
Thymian—*Herb. thymi.*
" wilder—*Herb. serpylli.*
Tillyöl } *Ol. terebinth. sulf.*
Tillytropfen }
Tinkal—*Boraæ.*
Tintenfischbein—*Os. sepiae.*
Tirmensalbe—*Ungt. aeruginis.*
Tirolerpflaster — *Empl. cantharid. perpet.*

Tizianwasser—*Mixt. vulneraria acida*
Togplaster—*Empl. plumbi comp.*,
selten *Empl. cantharid. perp.*
" schwarzes—*Empl. picis.*
Todtenbein — *Rad. dictamni albi, Conch. praep.*
Todtenkraut—*Herb. hederae terrestris.*
Todtenwecker — *Liq. ammon. caus-*
Todtenzahnöl—*Kreosot.* [*tici.*(!)
Tödtliches Wundwasser—*Mixt. vulneraria acida.*
Toggensalbe—*Ungt. majoranae, Ungt. rosmarini.*
Togpflaster—*Empl. plumbi comp.*
Togrödesalv, Togroisalv } *Ungt. rosmarini.*
Tollkirsche, Tollkraut } *Atropa belladonna.*
Tonkabohne—*Fabae tonco.*
Tonkakraut—*Herb. meliloti, Herba asperulae.*
Torand—*Herb. origani vulg.*
Trank, Wiener—*Infus. sennae comp.*
Traubenkirsche — *Prunus cerasus, Prunus padus.*
Traubenkraut, Mexikanisches—*Herb. chenopodii ambros.*
Traubencerat, Traubenpomade, Traubensalbe } *Ungt. pomadin. alb.* *Ungt. rosat.*, auch *Cerat. labiale* oder *Cerat. cetacei.*
Treckpflaster—*Empl. cantharidum.*
Treiböl—*Ol. ricini.*
Treibsalz—*Ammon. carbonicum.*
Tremsen—*Flor. cyani.*
Triachel, Triax—*Electuar. theriaca.*
Trieb, Triebsalz—*Ammon. carboni-*
Tripel—*Terra tripolitana.* [*cum.*
Tritum—*Ungt. plumbi.*
Trockenstein—*Lap. calamin. praep.*
Troddelmehl—*Lycopodium.*
Tropfen, Danziger—(*Tinct. aromat.*)
" Hoffmann'sche—*Spir. aether.*
" saure—*Mixt. sulf. acida, Tinct. aromatic. acida.*
" Schwedische—*Elixir. ad. longam vitam.*
Tropfen, siebenundsiebzigerlei—*Tinct chinioidini.*
Trumpetenpulver—*Cubebae pulv.*
Türkenblut—*Sanguis hirci.*
Türkenpulver—*Resina draconis.*
Türkisches Gras—*Rad. graminis.*
Tumeric—*Rhiz. curcumae.*
Tunrankenwörteln—*Rad. bryoniae.*
Turbithwurzel—*Rad. turpethi* (*Rad. jalapae.*)
Tutia, Tutz—*Tutia praep.*
Tyrolerpflaster — *Empl. cantharid. perp.*
Ueberrüthesalbe — *Ungt. plumbi, Empl. fuscum.*
Ueberwurzel—*Rad. carlinae.*
Ueberzuckerter Wurmsamen—*Confectio cinae.*
Ulmensprosssalbe—*Ungt. populi.*
Umgewandt od. Umgewend—*Unguentum.*
Umgewandter Degenstief, " dicksteif } *Ungt. digestivum.*
" Mercurius — *Ungt. hydrarg. cin. dilut.*
" Napoleon — *Ungt. hydrarg. cin.*, selten *Ungt. populi.*
" nerum—*Ungt. nervinum.*
" nutritum, " trittum } *Ungt. plumbi.*
" prinzdiwetat, " prinzipat } *Ungt. hydrarg. rubr.*
" Schabrian—*Ungt. c. scab.*
Umschlagskräuter—*Spec. ad cataplasma.*
Umschlagwasser—*Aq. plumbi.*
Umwandt blauer — *Ungt. hydrarg. cin. dil.*
Unbekannt—*Empl. plumbi comp.*
Unflatsalbe—*Ungt. hydrarg. cin. dil.*
Ungarischer Balsam—*Terebinth. veneta.*
" " flüssiger—*Aq. aromatica*, auch *Mixt. oleos bals. 38, Ol. terebint. rectif. 1.*
Ungenannt Pflaster—*Cerat. citrinum.*

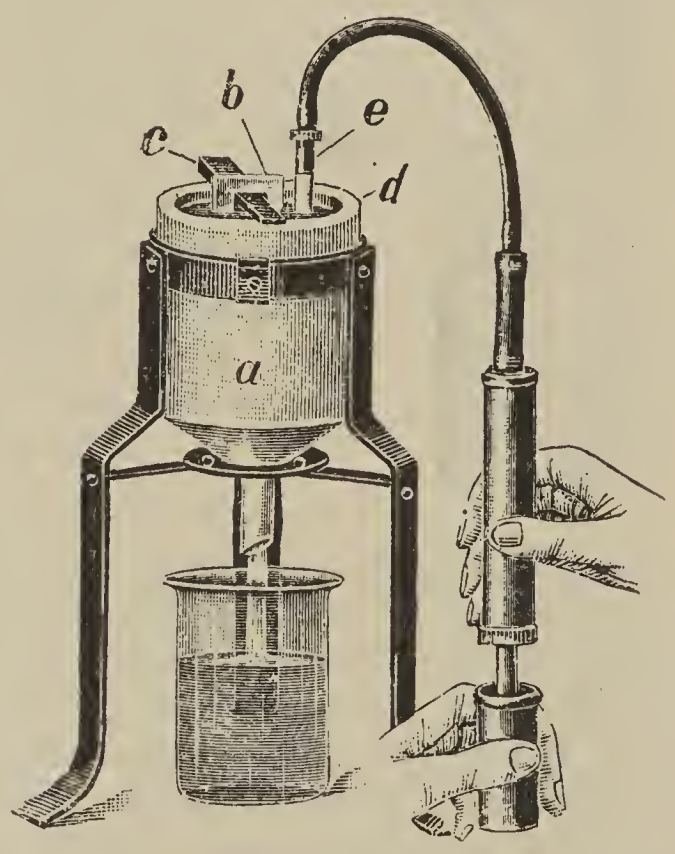
# MONTHLY REVIEW.

## Pharmaceutical Technique.

**Simple Device for Fractional Distillation under Diminished Pressure.**—G. Otto recommends to connect a T tube to the end of the condenser or the distilling flask by means of a piece of rubber tubing at *A*, in such a manner that the end of the condenser extends slightly into the tube. The receivers are connected in like manner to *a* and *b*, and by simply turning the T tube slightly the distillate runs either into *a* or into *b*. In like manner other T tubes may be connected at *a* and *b* and thus a larger number of fractions obtained.

[Chem. Centrbl., 1899 II, p. 1082; from Gaz. chim. ital., 29 II, p. 355.] *O. S.*

**A Simple Filter Press for Use in the Laboratory.** — Filtration by motion with an aspirator, has the disadvantage that low boiling liquids cannot be filtered as the loss by evaporation is too great. To obviate this difficulty von Loeben has devised the following simple apparatus: The main body of the filter (*a*) is made of porcelain and is provided with a sieve bottom. At the top is an elliptical opening (*d*). This permits that an elliptical cover can be slipped through the hole, although the cover is larger than the opening. This cover is somewhat rounded at the top and provided with a square handle (*b*), a tube (*e*) and a groove which bears a rubber ring; the latter making an air-tight connection with the upper surface of the body (*a*) of the filter. A double paper filter is laid on the sieve bottom and two half rings of porcelain placed on top to hold the paper in place. The cover is now inserted through the elliptical opening and then turned at right angles to the major axis of the opening. This gives a small opening on each side of the elliptical cover for filling the filter with the liquid. When filled the cover is turned until it has the position shown in the figure and held in place by means of the wedge (*c*) driven through the loop of the handle (*b*).

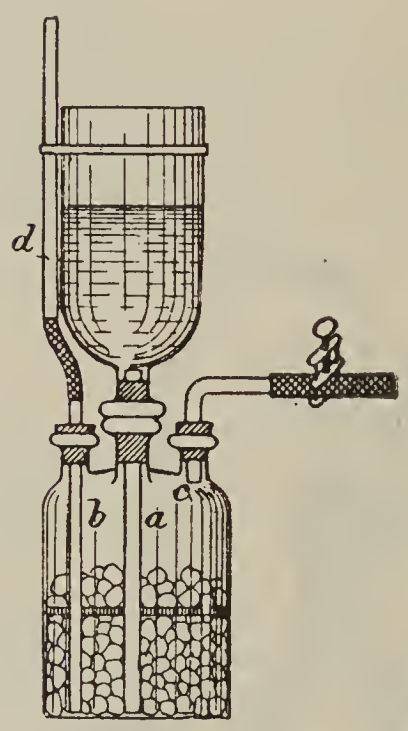


The tube (*e*) is closed at the inner end, but provided on opposite sides of the tube with two small openings. A piece of rubber tubing is stretched around the tube, closing the openings, and thus acting as a valve. Air is now pumped into the apparatus by means of a common bicycle pump, the increased pressure only tending to make the connections tighter by pressing the cover upward against the rim of the filter. In this way a pressure up to four atmospheres can be obtained. Made by the "Actiengesellschaft für pharmaceutische Bedarfsartikel," Cassel, Germany.

[Pharm. Centralhalle, 40, p. 779.] *O. S.*

**A Simple and Cheap Gas Generator.**—A very simple gas generator which appears to be a satisfactory apparatus for the purpose, has been designed by J. Katz to replace the more expensive Kipp apparatus. Its construction is as follows:

A three necked Wolf bottle of about 600 cc. capacity is provided with a cork and tube (*a*), about 7 mm. in diameter, reaching to the bottom of the flask and projecting about 2.5 cm. above the cork. Through one of the other necks is passed a tube (*b*) of about the same length and 2 to 3 mm. in diameter.



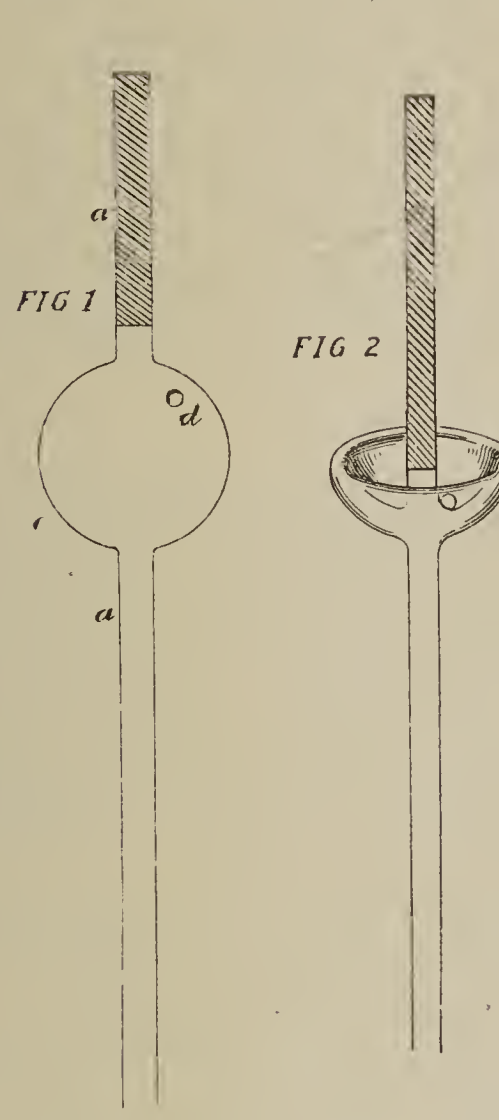

The bottle is now filled through the third neck to the height of about 4—5 cm. with fragments of glass, and water poured in, so that the glass fragments are not quite covered, and finally 10—15 gr. of solid paraffine are added. The bottle is now placed in warm water, and when the paraffine is melted, allowed to cool with a small board about 1 cm. in thickness put under one edge of the bottle, so that the paraffine layer solidifies in a slightly inclined position. When completely solidified a small hole is made in the paraffine with a hot wire and the water poured out.

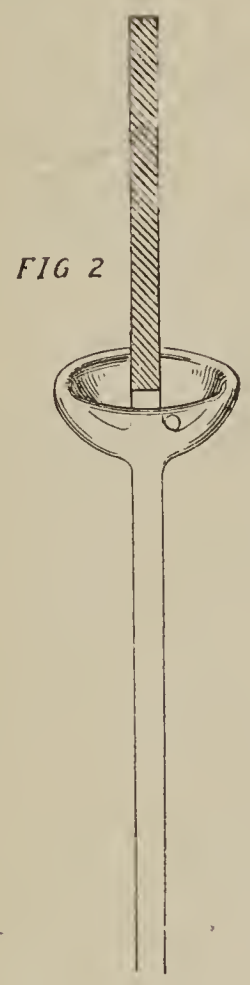
In this manner a bottle divided into two chambers by means of the layer of paraffine has been obtained. On top of the middle tube (*a*) is placed a bottle of about 500 cc. capacity, the bottom of which has been cracked off and the tube (*b*) is made longer by connecting it with another piece of glass tubing, (*d*) at least 1½ times as long as (*b*), by means of a piece of rubber tubing, 5 cm. in length. This tube is fastened by means of a rubber band to the upper bottle. The third neck of the bottle is now provided with a tube (*e*), but at right angles and connected by means of a rubber tube, with screw pinchcock with a washing bottle. The operation of the apparatus is readily seen from the figure. The upper chamber is filled with zinc, marble or ferrous sulphide and the upper bottle filled with diluted acid.

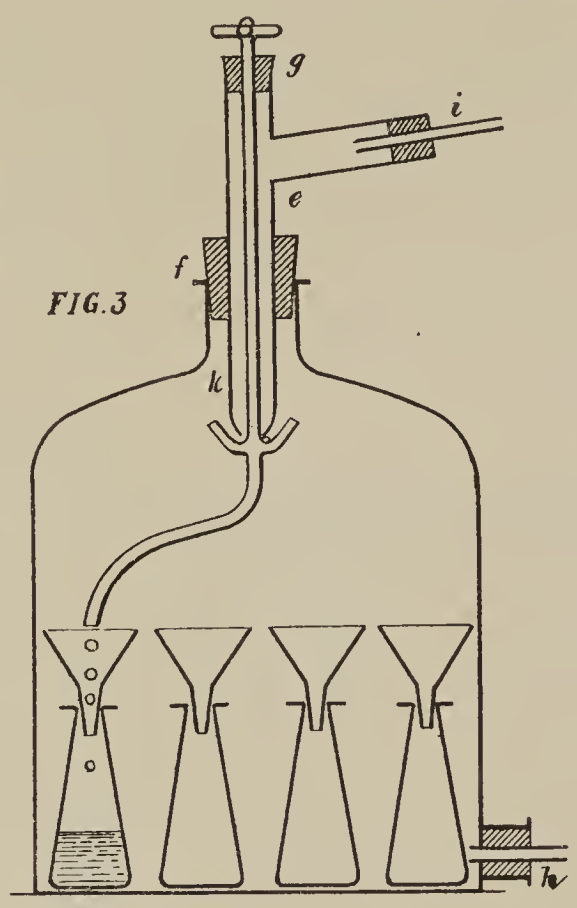
By regulating the screw pinch-cocks a steady flow of gas is obtained. When the acid is exhausted the pinch-cock is closed and water poured into the upper bottle; by lowering the tube (*d*) the entire liquid can be siphoned off. By pouring in more water and drawing off again the apparatus may be washed out and is then ready to be recharged with a fresh supply of acid.

[Pharm. Ztg., 44, p. 852.] *O. S.*

**Receiver for Fractional Distillation under Diminished Pressure.***—A very ingenious arrangement has been devised by Clemens Kleber for changing the receivers during a fractional distillation under diminished pressure with-




out interrupting the vacuum. The apparatus has been in successful use for over twelve years in the laboratories of Fritzsche Bros. The construction is so simple that it can be made by any one with a little skill in glass blowing from materials found in every laboratory.

An ordinary glass tube (*a*, *Fig. 1*) and a round glass rod, both about the thickness of a pencil, are fused together, and a bulb (*c*) blown out from the glass tube, about 1 inch in diameter and provided with a small hole (*d*). The upper half of the bulb is heated before the gas blast until soft and then forced down, so that a kind of double-walled cup with a hole in the bottom of the inner wall is formed (*Fig. 2*). A glass tee (*e*) (about ½ to ¾ inch) is

* The Review is indebted to the Am. Journ. Pharm. for the use of the accompanying cut.

inserted into the upper tube of an ordinary bitubular desiccator, by means of a good rubber cork (*f*), in the way shown in *Fig. 3.* The cup-piece before described is now inserted into the tee by means of a cork (*g*) saturated with paraffie and smoothly bored, after the lower end of the cup-piece has been suitably bent. The lower end of the tee which reaches into the cup is somewhat contracted, so that a small annular space is formed around the inner tube. The upper end of the glass rod is provided with a detachable handle, so that the glass rod can be pulled through the cork when the cup-piece needs cleaning. The operation of the apparatus is readily seen from the figure: after it has been evacuated through the tube (*h*), the distillate enters through (*i*), flows through the tee tube into the cup and from there into the receiving flasks which have been placed in a circle on the glass plate of the desiccator. The tee is provided with a small hole (*k*) on the side opposite to the nilet, through which air entering with the distillate can escape, so that spattering out of the cup is avoided. To take a new fraction, all that is necessary is to turn the handle till the liquid drops into the next receiver.

[Am. Jour. Pharm., 71, p. 576.] *O. S.*

## Chemistry.

**Estimation of Phosphoric Acid.** — While it is generally believed that it is not safe to precipitate phosphoric acid with molybdate when organic matter is present, F. P. Veitch finds that in the presence of citric acid the precipitation is complete. His experiments were carried out on citrate-soluble phosphates and the results check up well with those obtained by standard methods. Hence the oft-repeated statement that salts of organic acids and organic matter generally prevents complete precipitation of ammonium phosphomolybdate must be modified. [J. Am. Chem. Soc., 21, p. 1090.] *W. A. P.*

**Lemon Flavoring Extract and its Substitutes.** — A. S. Mitchell reports the results of an examination of the lemon extracts found upon the market. The work was done for the Wisconsin Dairy and Food Commission.

There being no standard methods of examination, a study of lemon oil and its substitutes was made and the optical methods found most satisfactory for the purpose. The optical rotation of the oils and their alcoholic solutions were determined, also the refraction of the oils, and upon this was based the process of estimation of lemon oil. The methods of analysis can not well be abstracted and must be referred to in the original.

Lemon oil ranged from "a trace" and 0.1 percent to 7.5 percent. The alcoholic strength varied from 20.6 to 94.66 percent. Tropaeolin and dinitrocresol were the foreign coloring agents noted.

[J. Am. Chem. Soc., 21, p. 1132.] *W. A. P.*

**The Application of Hydrogen Dioxide in Quantitive Analysis.** — Carl Friedheim and Ernst Bruehl remark that, although hydrogen dioxide

apparently is the most convenient oxidizing agent for analytical use, since it breaks up into water and oxygen, thus introducing no new substances into the solution under examination, and since an excess of it can readily be expelled, in certain qualitive reactions it has been employed for some time. Its use in quantitive estimation has only become feasible since Hanriot (Comptes rendus, 100, p. 172) and Wolfenstein (Ber. d. deutsch. chem. Gesell., 27, p. 3307) succeded in obtaining a sufficiently pure and concentrated reagent by distillation in vacuum.

The authors present a review of the various uses to which the analyst has put hydrogen dioxide and then discuss in detail its employment for the separation of such metals as chromium, manganese, etc. These separations have been critically studied by Jannasch and his students and the most successful methods incorporated in Jannasch's "Praktischer Leitfaden der Gewichtsanalyse, Leipzig 1897".

While Jannasch recommends the separation of manganese, chromium, bismuth, lead and silver by oxidizing and simultaneously precipitating with hydrogen dioxide, the authors see no reason why the last three elements should be separated by this method and old, excellent processes abandoned. For the separation of manganese and chromium from other metals, no satisfactory method has so far been devised and the precipitation of these metals as peroxides would be eminently satisfactory if this method yields accurate results. Accordingly the authors have studied the separation of manganese from copper, zinc and nickel: and also that of chromium from manganese, iron and aluminum. The analytical data can not well be abstracted. In general their result was far from satisfactory. They conclude that: 1) the precipitation of manganese is not complete in solutions containing much of ammonium salts, or if strongly acid; 2) the oxidation of chromium solutions is incomplete. The method can not be employed to separate chromium from metals, the hydroxides of which are insoluble in sodium or ammonium hydrate.

[Ztschft. anal. Chem. 38, p. 682.] *W. A. P*

**The Estimation of Chlorine in Chlorinated Lime.** C. Wolowski bases a determination of available chlorine in chlorinated lime upon the reactions: $CaOCl_2+H_2SO_4=CaSO_4+H_2O+2Cl$; and $HI+4Cl=HCl+ICl_3$. In each one of a series of test-glasses are measured 5cc of a 0.1 percent potassium iodide solution and six drops of a 20 percent sulphuric acid. From a burette the chlorinated lime solution is added in varying amounts and thus the volume ascertained which evolves sufficient chlorine to combine with all iodine. Absence of iodine is ascertained by absence of color and verified by agitation with chloroform. [Zeitschft. f. anal. Chem., 38, p. 711.] *W. A. P.*

**On the Universal Distribution of Titanium.** — The universal distribution of titanium in the mineral and plant world is practically acknowledged.

V. Roussel found it in basalt; Aleksiejew in certain clays. Holland found it in certain igneous rocks. Dunnington observed its occurrence in the soil of Albemarle county, Va.; later the same writer with McCaleb found it in sixteen specimens of soil collected from different sections of the United States. Subsequently after having examined a large number of samples of soil collected from all parts of the globe, Professor Dunnington asserted its universal occurrence in the soils of the world.

W. A. Noyes found it in a number of Arkansas minerals. Hillebrand has shown its presence in a large number of rocks and minerals collected by the United States Geological Survey. Wait found it in the ashes of several plants and different kinds of wood, also in coals, bituminous and anthracite. Haywood found traces in domestic strawberries and 0.1088 percent in the ash of wild strawberries (*Fragaria virginiana*). Langenbeck speaks frequently of its occurrence in clays. It has been found by C. Baskerville rather widely distributed in the clays of North Carolina. While Roscoe and Schorlemmer state that "it does not appear to form part of the animal and vegetable kingdom," Wait assumes that it is assimilated by plants. C. Baskerville shows its presence in the ashes of peat. As the clay substance therein is comparatively small, its presence can scarcely be attributed to that. F. Garrigon found traces in mineral waters.

The ash from incinerated fresh beef, beef bone, human flesh and bone free from dirt were examined by C. Baskerville with the following results: Beef bone 0.0195 percent, beef flesh 0.013 percent, human bone a trace, human flesh 0.0325 percent titanic oxide. J. L. Howe found titanium in abundance in dead bones, but only traces in fresh bone and muscular tissue. C. E. Wait made an examination of a large number of bodies and believes that titanium was found in nearly all of them.

[Am. Chem. Journ., 21, p. 1099.] *I. Brandel.*

**A New Indicator for Acids and Alkalies.**—According to Riegler the action of diazoparanitraniline on an alkaline-guaiacol solution produces a diazo-compound of the composition

$$C_6H_4\begin{cases}NO_2\\ N=NC_6H_3.O(CH_3)OH\end{cases}$$

This compound is of a brown color. The alkaline reacting solution of this compound in alcohol is of a fine red color, which changes over to a yellowish-green, as soon as a trace of acid is present in excess. This diazo-dye is best prepared as follows: 1 gr. of guajacol is dissolved in 50 cc. of water and 30 cc. of a 10 percent sodium hydroxide solution added. This solution is now mixed with a solution of diazoparanitraniline. The latter is prepared as follows: 1.25 gr. of paranitraniline are dissolved, by heating, in 50 cc. of water and 4 cc. of concentrated hydrochloric acid, and then diluted with 100 cc. of cold water, and finally when completely cold 0.5 gr. of sodium

nitrite in about 30 cc. of water are added. When the solutions are mixed, a red color is produced, and on adding concentrated sulphuric acid drop by drop, until the solution is acid, the dye stuff precipitates out. After washing with water it is dried in a desiccator. The indicator solution is prepared by dissolving 0.2 gr. of the dye stuff in 100 cc. of alcohol.

[Pharm. Post, 32, p. 722.] *O. S.*

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## Botany and Pharmacognosy.

**Small Jaborandi Leaves as an Adulteration of Coca Leaves.** — John Barclay recently obtained a sample parcel of coca leaves from a London broker consisting of 40 to 50 percent of small jaborandi leaves mixed with Bolivian coca. [Chemist & Drugg., 55, p. 1030.] *W. A. P.*

**Changes in Oil of Bergamot.** — E. Charabot finds that during the process of ripening, the essential oil of the fruits of *Citrus bergamia* undergoe a marked change, losing free linalool and "bergaptene," but increasing in terpenic constituents and in linalyl acetate. Thus he finds the green fruits give an oil containing 13.9 per cent of free linalool, and 26.6 per cent combined as esters; while that from the ripe fruit contained but 5.9 per cent of free linalool with 29.6 per cent as esters. The total linlalool in oil from the unripe fruit being 40.5 per cent, that in the ripe fruit 35.5 per cent. Although the amount of the terpenes increases during ripening, the relative proportion of the two principal ones, limonene and dipentene, remains the same. [Pharm. Journ. 63, p. 577; from Comptès rend., 129, p. 728.] *E. K.*

**Kickxia Africana**.—The seeds of this plant have been noticed as a substitute for strophanthus, but the plant was not previously known to yield india rubber. But in 1895, specimens of an india rubber plant sent from Lagos to Kew were identified as *Kickxia africana** and the figures of flowers and fruit were given. Recently, however, better materials have been received from Lagos, and these show that the specimens previously received did not belong to one plant, but to two nearly allied species, one of which yields excellent india rubber, and the other does not, the evaporated juice of the latter yielding a sticky substance more nearly approaching gutta-percha than india rubber. At a recent meeting of the Linnean Society, Stapf, of the Kew Herbarium, exhibited and described specimens of these two plants and showed that they must be placed in a new genus, which he named *Fantumia*, after one of the native names of the rubber. The one yielding india rubber he has named *F. elastica*. This when in fruit, is recognized by its short stout pod, and when in flower, by its petals being ovate and shorter than the tube of the corolla, and when in leaf alone, by minute

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* Kew Bull., 1895, p. 243; 1896, p. 76.

oblong depressions at the base of the lateral veins on the under surface of the leaves. The other plant which does not yield india rubber, he has named *F. africana* (this being the old *Kickxia africana*). It is distinguished by its flowers having petals of a linear lanceolate shape, three or more times longer than the tube of the corolla, a long narrow angular pod, and leaves without the minute oblong depressions on their under surface. There are other characters distinguishing them, and the genus *Fantumia* from the genus *Kickxia*, which latter will now be confined to the Asiatic species. A full account of these characters will, it is reported, shortly be published by the Kew authorities. [Pharm. Journ., 63, p. 577.] *R. H. Denniston.*

**On the Occurrence of Acetone and Hydrocyanic Acid in Plants.**—M. P. van Romburgh records the occurrence of the following substances in the vegetable kingdom. Acetone appears to be a substance widely distributed, and was detected in *Hevea brasiliensis*, *Manihot glaziovii* and *M. utilissima*, *Phaseolus lunatus*, and many other plants. Methyl salicate is apparently a substance of wide distribution in the vegetable kingdom, and is recorded in many plants, and in many organs of those plants. The presence of hydrocyanic acid was determined in *Hevea brasiliensis*, *Manihot glaziovii*, the leaves of *Indigofera galigoides* and *Phaseolus lunatus*, and, in smaller quantities, in the leaves of many other plants.

[Pharm. Jour. 63, p. 577; from Ann. Jard. Bot. Buitzenzorg, 16, p. 1.] *E. K.*

**Rheum Franzenbachii as a Drug.**—H. Moeller has shown that this species is not one from which the official rhubarb is obtained. The official drug is now obtained from *Rheum officinale* Baill. and *R. palmatum* Linn., but up to the time of the present research it was thought possible that the species in question also furnished a part of the Chinese rhubarb of commerce. The plant was first noticed by Franzenbach, who brought specimens and seed to Peking and from there to Europe.

The plants studied in connection with the present article were raised by Prof. Schütt and presented by him to the author, who after making a careful review of the characteristics of the species, states that as furnishing the official drug, it is out of the question.

The plant differs from *Rheum officinale* and *R. palmatum* in having divided leaves.

Also from the outer form, inner structure and color of the root it appears impossible that it can be one from which the true rhubarb is obtained. It differs also in odor and taste. The odor is not so strongly aromatic, but weak and not characteristic. The taste is strongly herbacious and has nothing in common with the aromatic bitter of the true drug.

[Ber. d. d. Pharm. Ges., 9, p. 293.] *R. H. D.*

## Practical Pharmacy.

**The New German Pharmacopœia.**—The fourth edition of the German Pharmacopœia did not appear last year, but the Federal Council has decided to make known some of its principal contents, especially the new preparations. With this object the President of the Pharmacopœia Commission (Privy Councillor Köhler) has given particulars of the changes. Twenty-five new preparations have been proposed—viz.:—

Adeps lanæ anhydricus
Æther. pro narcosi
Arecolinum hydrobromicum
Bismutum subgallicum
Caffeino-natrium salicylicum
Gelatina alba
Hydrastinum hydrochloricum
Oleum camphoratum forte (1+4)
Oleum santali
Pyrazolonum phenyldimethylicum salicylicum
Serum antidiphthericum
Unguentum adipis lanæ
Adeps lanæ cum aqua
Alcohol absolutus
Baryum chloratum
Bromoformium
Hydrargyrum salicylicum
Pilulæ ferri carbonici Blaudii
Semen erucæ
Tela depurata
Tuberculinum Kochi
Oleum chloroformi (1+1)
Vinum Chinæ (quininæ)
Caoutchouc

The greatest innovation is in the descriptions of drugs, mostly being now bought either cut or in powder. A full description of entire parts, which was formerly given, is useless; therefore stress will be laid on the anatomical and microscopic tests. In general, all the tests are stricter and the purity requirements greater.

The introduction of caoutchouc into plasters is new in the Ph. G. IV.

[Chem. & Drugg., 55, p. 915.] *W. A. P.*

**Distilled Extract of Witchhazel.**—L. E. Sayre discusses the varying quality of witchhazel. Beyond a requirement of 15 percent alcohol the only means of judging its quality is to observe the odor before and after evaporating a portion of the sample upon filter-paper or some similar method. Before a more scientific method can be adopted the active ingredient of the preparation must be determined.

Discussing Feil's claim that protocatechuic acid is the active principle, it is remarked that if this be true, the N. F. method of preparation should be changed, since this acid does not come over in the ordinary process of distillation.

Sayre reports experiments of his students, R. E. March and L. D. Havenhill, who studied the varying reducing action of witchhazel upon potassium permanganate. While no conclusive results were arrived at, it was demonstrated that the reduction does not depend upon the volatile constituent. The residue left after distilling 100 cc. of witchhazel possessed the same reducing power as 100 cc. of the original liquid. Sayre questions if this re-

ducing substance is Feil's pyrocatechuic acid or organic matter from the water used for the manufacture of the extract.

The alcoholic strength of the specimens varied all the way from 10 to 15 percent, only one sample showing the latter figure.

[Merck's Report, 8, p. 549.] *W. A. P.*

**The Assay of Cinchona.**—Raymond High says that some of the objections to U. S. P. method of cinchona assay are: 1, The menstruum prescribed does not fully exhaust the mass in the time prescribed. 2, Any process taking an aliquot portion is not exact. 3, The amount of ammonia water ordered is too small for most cinchonas. 4, After evaporating the filtrate and extracting with 4 cc. normal sulphuric acid and washing with water, much alkaloid remains behind. 5, The readiness of the solution to emulsionize. 6, The long time required to extract the alkaloid with chloroform.

In the process devised the drug is moistened with ammonia, dried and then completely extracted with alcohol in a Soxhlet extractor. Care is taken to extract from the residue of the alcoholic extraction all the alkaloids. Formation of emulsions in the final extraction is avoided first by adding chloroform, then gradually adding just sufficient alkali, the mixture being constantly rotated so as to take up the alkaloid as fast as liberated. The extraction is finished with a mixture of chloroform, 2 parts, and ether, 1 part. For the estimation of quinine the pharmacopœial method is used, except that 20 cc. of ether are used. A table of results is given showing the value of the method.

[Am. Druggist, 35, p. 354.] *W. A. P.*

**Asafetida.**—The British Pharmacopœia, 1898, requires asafetida to contain at least 65 percent of alcohol-soluble matter, and to yield not more than 10 percent of ash upon incineration. In view of the statements to the effect that adulteration of asafetida was intentional and that pure samples were obtainable. John C. Umney states that he has examined many packages of asafetida during the last eight years, and in no instance could average samples of such cases be obtained that would meet the B. P. requirements. Although the adoption of the highest possible standard is commendable and will no doubt improve the quality of the drug sent to the market, there is at present the difficulty that such a drug is not obtainable in the trade. To support this statement Umney gives the results of a series of examinations. While the ash of selected tears of asafetida often falls as low as 4 percent, the ash of the whole case from which these tears were selected would be as high as 16 to 17 percent. One of the finest cases procurable in the London drug market gave an average of 21.5 percent of ash. The requirement that 65 percent be soluble in alcohol is also objected to and the 50 percent limit of the German pharmacopœia preferred. The figures reported show a solubility ranging from 80 down to 21 percent.

[Chemist & Drug., 55, p. 983.] *W. A. P.*

# Literary.

## Books and Pamphlets Received.

Am. Pharm. Ass'n—Baltimore. Proceedings of the American Pharmaceutical Association at the Forty-seventh annual meeting held at Put-in-Bay, September, 1899. One vol., pp. 890.

P. Blakiston's Son & Co.—Philadelphia. Commercial Organic Analysis. A treatise on the properties, proximate analytical examination and modes of assaying the various organic chemicals and products employed in the arts, manufactures, medicine, with concise methods for the detection and determination of their impurities, adulterations, and products of decomposition. By A. H. Allen. Third edition, illustrated, with revisions and addenda by the author and H. L. Leffman. Volume 11, Part I: Fixed oils, fats, waxes, glycerol, nitroglycerin and nitroglycerin explosives. pp. X, 387. 1899. $3.50.

Author—Chapel Hill, N. C. The definition of the element. Address by F. P. Venable. Reprinted from the Report of the American Association for the Advancement of Science. Pamphlet, pp. 14.

Natural science of the ancients as interpreted by Lucretius, by F. P. Venable. Reprinted from the Journal of the Elisha Mitchell Scientific Society, Vol. 15, Part 1. Pamphlet, pp. 12.

C. MacMillan—Minneapolis. Minnesota Botanical Studies. Second series, part III, pp. 156. December, 1899.

A. Tschirch—Bern. Arbeiten aus dem pharmacentischen Institut der Universität Bern.

*A.* Reprints from the "Archiv der Pharmacie":—

Beiträge zur Kenntnis des Aloins. Von O. A. Oesterle. Pamphlet, pp. 12.

Notiz über den Rhabarber und seine wirksamen Bestandtheile. Von A. Tschirch. Pamphlet, pp. 6.

Untersuchungen über die Sekrete. 27. Beiträge zur Kenntnis der Aloe. Von Guelow Pedersen. Pamphlet, pp. 13.

29. Studien über den Stocklack. Von A. Farner. Pamphlet, pp. 14.

30. Ueber das Umbelliferen-Opopanax. Von A. Knitl. Pamphlet, pp. 15.

31. Ueber die Sekretbildung im Wund- und Kernholze. Von A. Will. Pamphlet, pp. 4.

*B.* Reprints from the "Schweiz. Wochenschr. f. Chem. u. Pharm.":—

Kleine Beiträge zur Pharmakobotanik und Pharmakochemie: Das Kalken der Muskatnüsse. Leaflet, pp. 2.

Erkennung gefälschten Opiums mittelst Röntgenstrahlen. Leaflet, p. 1.

Versuch einer Theorie der organischen Abführmittel, welche Oxymethylanthrachinone enthalten. Leaflet, pp. 7.

Ueber die Erkennung der giftigen Sikkimifrüchte im Stemanis. Von W. Lenz. Leaflet, pp. 5.

Weitere Untersuchungen über die Gruppe der Abführmittel, welche Oxymethylanthrachinone enthalten. Leaflet, pp. 3.

Ueber das Cinnamein. Leaflet, pp. 2.

Untersuchungen der Resinolsäureharze. Leaflet, pp. 2.

Zur Aufklärung der Aloereactionen. Von K. Heuberger. Leaflet, pp. 7.

## Reviews.

MORPHOLOGY AND HISTOLOGY OF PLANTS. Designed especially as a guide to Plant Analysis and Classification and as an introduction to Pharmacognosy and Vegetable Physiology. Part I. The Morphology of Plants by Henry H. Rusby, M. D., Professor of Physiology, Botany and Materia Medica, College of Pharmacy of the City of New York, etc. Part II. Plant Physiology by Smith Ely Jelleffe, M. D., Ph. D., Professor of Pharmacognosy and Director of Bacterial and Microscopical Laboratories, College of Pharmacy of the City of New York, etc. With 693 illustrations, 378 pages. Published by the Authors, New York, 1899.

This work is intended to replace the "Essentials of Pharmacognosy," by the same authors. The present work contains all that may be found in the former publication and much additional matter of a more general nature; hence, presumably, the change of title. As thus remodelled the book is especially designed to meet the needs of two classes of students; those studying pharmacognosy and other lines of applied botany and those needing instruction preliminary to work in plant identification. To increase its usefulness to students working by themselves the authors have provided abundant illustrations. The subject matter is on the whole well chosen.

Part I gives in a sufficiently complete way the gross morphology of the flowering plants and presents the points made with clearness. The large number of illustrations accompanying the text is at this point especially welcome. A short chapter on a few of the types disposes somewhat too briefly, perhaps, of the cryptogamous plants. A chapter on nomenclature sets forth very clearly the fundamental principles of a side of bibliography ordinarily none too well understood by students in botany, especially by those who are not look-

ing forward to work in taxonomy. Practical directions in herborization and related topics deserve mention.

An introduction, consisting fortunately of less than ten pages, prefaces Part I and receives here secondary mention because it is, both in style and substance, much below the standard of the body of Part I. It is to be regretted that clearness and coherence should be lacking in the introduction to a work of this nature.

Part II presents in a fairly concise form the essentials of minuter plant structure. The standpoint of the writer is, generally speaking, modern, place being given to the more recent important discoveries in the field covered. Throughout this part bad style is too often in evidence. The discussion of the organs of the cell and their independence and interdependence is confusing if not positively misleading. The subject of "assimilation" in one place, "photosyntax" in another is likewise unsatisfactory.

In the judgment of the reviewer, the title of the original work would have been more appropriate to the book in hand than the one it bears. This book will do its best service as an introduction to botany for students in the two years' course in pharmacy, as this course is found in the majority of our colleges. As a general text book of morphology and histology it must be compared with works like that of Strassburger and his associates and it ill bears such comparison.

The paper and print used are excellent. *Rodney H. True.*

JUSTUS VON LIEBIG UND CHRISTIAN FRIEDRICH SCHOENBEIN. Briefwechsel 1853—1868. Mit Anmerkungen, Hinweisen und Erläuterungen versehen und herausgegeben von Geo. W. Kahlbaum und Eduard Thon. Ein Bd., pp. XXI, 278. Verlag von Johann Ambrosius Barth, Leipzig. 1900. Mk. 6.00, geb. Mk. 7.30.

The volume before us is number five of the series of monographs on the history of chemistry begun somewhat over two years ago by Dr. Kahlbaum of Basle. That these monographs are filling a former want in chemical literature, no one will doubt who has taken cognizance of them. It is to be hoped that they will receive that appreciation which is necessary to make them a financial as well as an historical success.

The revival of the work of Schoenbein, to which numbers four, five and six are being devoted, is especially opportune at the present

time. The attention which is being bestowed on what we now term physical chemistry is so liberal and the appreciation accorded it is so unqualified that we are apt to overlook the difficulties which the earlier representatives of this direction had to contend with in order to secure even a hearing for their heretical ideas. Chemists directed their thoughts to that which is material rather than to the changes that brought about differences in chemical substances. Liebig e. g. was so wrapt up in his work that although he knew of Schoenbein's discoveries, he gave little attention to them until he made the latter's personal acquaintance thirty years after both had listened to the same lectures at Erlangen. Woehler was so skeptical that, even after Liebig had "discovered" Schoenbein, he wrote to his friend in Munich with regard to Schoenbein's azone reactions: ". . . . there is something peculiar, probably something remarkable, probably a modified condition of oxygen; . . . . but . . . . but as long as one cannot grasp the thing and lay it on the balance, it does not interest me particularly."

On the other hand Schoenbein's letters also contain a warning to physical chemists who are completely wrapt up in the frolics of their youthful giant. To Schoenbein the rapidly developing organic chemistry of his days remained a book with seven seals. Although he confesses this himself, yet he has nothing but ridicule for the *arrangement moleculaire* of the French chemists, and for the theory of types, which both were still in their infancy. The lack of understanding, appreciation and sympathy on the part of the representatives of these various directions should teach us a lesson of the danger of narrowness. Clothed, as these lessons are, in bits of the every day life of the correspondents, they appear so human and, therefore, seem so applicable to our own lives.

It seems doubtful whether anything at present can exert a more wholesome influence on our *fin de siècle* chemists' minds than the publication of such correspondence as that of Liebig and Schoenbein.

Aside from the personal element these letters give us that insight into the development of chemistry which is necessary not only for a better understanding of the specific subjects under consideration, but also for the appreciation of chemical treatises of a more general and philosophic character. They constitute one of the most interesting instances of the biographic method of teaching history, a method that is now universally recognized as laying an excellent

foundation for deeper study. Chemistry thus becomes a cultural study as well as a source of knowledge that can be applied. For this reason if for no other, the reading of published correspondence by eminent representatives of our science cannot be too highly recommended. *E. K.*

SCHLICKUM'S APOTHEKERKALENDER FUER DAS DEUTSCHE REICH. 1900. Erster Teil, mit der Biographie und dem Bildniss Professor Dr. A. Tschirch's, Kalender, gemeinnützige Angaben, Hilfsmittel für die pharmaceutische Praxis. Herausgegeben von Dr. Franz Lüdtke. 18. Jahrgang, Stuttgart. Verlag von Strecker & Schroeder. 1899. Mk. 1.50.

The eighteenth annual edition of Schlickum's Apothekerkalender is practically unchanged in external appearance, and enlarged but very little as regards reference matter. A picture of Dr. A. Tschirch serves as frontispiece, followed by a brief biographical sketch. The general contents in the opening pages are of interest to the pharmacist of Germany alone, as pharmacy laws and organizations, post and tariff regulations. The calender, specific gravity, percentage, incompatibility, atomic weight, molecular weight, dose (maximum single and daily), poison and antidote tables (specific directions according to a special classification) which are contained in the book, are fairly complete. The new remedies introduced during 1898, together with their physical and physiological properties are given. Numerous formulae for generally used unofficial preparations according to Theodor Pusch's Defektur-Taschenbuch complete the volume.

*W. O. R.*

MINNESOTA PLANT LIFE. By Conway MacMillan. Report of the Survey Botanical Series III. The Pioneer Press, St. Paul, Minn. Oct. 1899. pp. 568.

In these days when good new botanical treatises for the teacher of botany or the trained botanist follow each other in such rapid succession, the appearance of a single additional one is not likely to attract especial attention, unless, indeed, it surpasses its fellows in excellence in a very considerable measure. Nor is any one of these alone likely to make a very profound impression upon any considerable number of people.

Quite different is it likely to be, however, with a book written primarily for the laity, provided always the work is properly done.

Prof. MacMillan in his Minnesota Plant Life has been eminently successful in adapting his manner of treatment and style of expression to the audience to which he chiefly addresses himself. He has given to the people a treatise clothed in simple language upon an interesting scientific subject. The subject matter of the book is divided into forty-five chapters. The first of these deals with the general considerations of plant societies or communities; the second with the general principles of plant migrations. Chapters three to thirty-nine are given to description in simple language of types of all the groups of plants occurring within the limits of the state of Minnesota from the simplest in structure to the most complex. The last five chapters of the book are devoted to a discussion of the relation and behavior of plants toward their environment, and the perpetuation of the individual and the race.

From a mechanical standpoint the work is of a very high order. Print and paper are excellent, illustrations copious and on the whole very good. If this book can be placed in the common schools of Minnesota it ought to mark the beginning of a new botanical era in that state.

*L. S. C.*

FORMULAIRE DES MÉDICAMENTS NOUVEAUX POUR 1900, par H. Bocquillon-Limousin, pharmacien de 1re classe, lauréat de l'École de pharmacie de Paris. Introduction par Dr. Hughard, médecin des hôpitaux. 1 vol., 18mo., pp. 324. Librairie J.-B. Baillière et fils, 19 rue Haute-feuille, Paris. 3 fr.

The eleventh edition of the Formulaire presents practically the same appearance as previous editions, a slight increase in the number of pages being noticed. Such preparations as are generally termed "new remedies" are discussed in alphabetical order, as to their synonomy, composition, physical and therapeutic properties, form of administration and dose.

The list of new remedies contains practically all of those contained in the previous editions, among them some of the standard organic medicinal substances, and in addition the most important of those introduced late in 1898 and during 1899. The following is a very brief summary of the important additions:—Acoïne, Dionine, Eudermol, Gélatine, Heroin, Homocresol, Iodipin, Nirvanine, Oxycamphre, Sirolinê, Tannocaseum.

An alphabetical index of the synonyms, together with doses of the remedies mentioned in the body of the book, completes the volume.

*W. O. R.*

# SUPPLEMENT.

## Scientific Societies.

**American Pharmaceutical Association.**—At the 47th annual meeting of the American Pharmaceutical Association, held at Put-in-Bay, O., Sept. 4—12, 1899, the Council resolved that no advertisements be solicited or accepted for any of the publications or programs issued by or in the name of the Association and the General Secretary was instructed to inform annually the Local Secretary and the Pharmaceutical Press of this resolution.

CHAS. CASPARI JR.,
General Secretary.

**Section on Scientific Papers.** In submitting the accompanying list of queries, the Committee on Scientific Papers beg to remind the members of the Association of the date (May 7th—12th, 1900) selected for the next annual meeting at Richmond, Va. We trust that the usual number of papers will be contributed upon subjects of interest, notwithstanding the time for their preparation is shorter than in previous years.

The queries have been selected with a view, more especially of securing papers from members not regularly contributing to this Section, but we shall be pleased to receive contributions from any member, upon such subjects as he may select, which may be of interest to the Association.

Papers may be sent to any member of the Committee. All papers which it is intended to have in print for the next annual meeting should be in the hands of the Chairman not later than April 10th, 1900.

*Prizes.* The Association annually offers three General and three Special Prizes for meritorious papers containing accounts of original investigations or improved methods of preparation of chemical or pharmacal products, as also other valuable contributions to science. These prizes vary in value from $20.00 to $50.00, and are awarded by committees especially appointed for that purpose.

For particulars, see pages xxi and xxii of vol. 46, Proceedings, 1898.

We also call attention to the Centennial Fund, created for the purpose of encouraging scientific investigation by defraying the expense of such work. (See By-laws of the Council, chap. vii, page 1150, vol. 46, Proceedings, 1898.) Members desiring to avail themselves of this fund should make application to the General Secretary of the Association, Chas. Caspari, Jr., Baltimore, Md.

### QUERIES.

1. A paper on Urine and bacteriological examinations by pharmacists.

2. Cannot disinfection of infected houses be undertaken by pharmacists in the smaller cities and towns with profit to themselves? A paper on the methods employed is desired.

3. To what extent are official plasters employed in the practice of Pharmacy and Medicine?

4. What has been the effect of Serum therapy on the practice of Pharmacy?

5. Official Aspidium is said to be difficult to obtain. What is usually

supplied for it, and what is the medicinal value of the substitute?

6. Is it desirable to increase the strength of official Syrup of Hydriodic Acid?

7. What is the quality of Potassium Iodide and Bromide usually found in the market?

8. Give a method of making Liquid Petrolatum free from odor and color.

9. Is it practicable to make Red Mercuric Oxide, commercially, entirely free from Nitric Acid or Nitrates?

10. What effect has age on Podophyllum, after collection, as to the amount of resin it will yield?

11. What is the real medicinal value of Carthagenia Ipecac?

12. Have favorable results been obtained by the use of Acetic Acid Fluid Extracts in medicine?

13. Hydrochloric Acid sold as chemically pure, is said to often contain Iodine and Bromine. Is this a fact?

14. Is the U. S. P. Sulphuric Acid test for organic impurities in Salicylic Acid and Sodium Salicylate too rigid?

15. Is Salicylic Acid prepared from Oil of Wintergreen more desirable for medicinal use than a carefully prepared synthetic product?

16. Is the Oil of Cade usually found in the market such as the U. S. P. describes?

17. Some pills sold as Quinine Sulphate are found to approach in solubility in water Quinine Bisulphate. Is it proper to sell such pills for Pills of Quinine Sulphate? Examine commercial samples.

18. Is it practicable to make a compressed tablet which, when added to water, will make Liquor Calcis of the strength of the U. S. P.?

19. What Fluid Extracts are best made from "green drugs"?

20. What official solid extracts can be replaced by extracts in powdered form? Give methods for making the same.

21. Give a formula for making effervescing tablets of Lithium Citrate, which will yield a product reasonably permanent.

22. What is the most satisfactory diluent for use in making hypodermatic tablets?

23. Asafetida of commerce is said not to conform with the U. S. P. as to its solubility in alcohol. Should the requirement be changed, and if so, what standard should be adopted?

24. Embalming solutions are now largely employed by undertakers. Would not the manufacture and sale of these solutions be a proper and profitable business for pharmacists?

25. A paper on "Notes and Observations" of interest to pharmacists. F. G. RYAN, Philadelphia.

The Committee of the **Section on Education and Legislation** desires to call attention to some of the subjects upon which they would like to have papers presented at the Richmond meeting.

1. A draft of a "uniform poison law," with penalties for violation of the same.

2. A draft of a "pure food law," with penalties attached for adulterations.

3. What amount of pharmaceutical education is being given to the medical students of the present time, and how far do they profit by it?

4. Who is responsible for the large growth in the use by physicians of proprietary articles? How can this tendency be best controlled?

5. What *practical* steps can be taken by the Association towards the repeal of the present unjust trade-mark laws?

6. To what extent have pharmacists been benefited by pharmacy laws?

7. To what extent are these laws observed by pharmacists?

8. Some of the pharmacy laws recognize only "registered pharmacists," others have an additional class called qualified assistants; which is preferable?

9. Under what restrictions should pharmacists be permitted to sell liquors?

10. Should pharmacy boards be supported by the fines and fees accruing through the administration of the law, or by direct appropriation from the state treasury?

11. What are the arguments, *pro* and *con*, for the admission of some of the more important of the new synthetic remedies into the U. S. P.?

12. Give a list of those whose admission would seem desirable, and the names under which they should be admitted.

13. A dose list is wanted for the articles official in the U. S. P., and in addition the maximum amount that can be given in 24 hours.

While these suggestions for papers are presented, it is hoped that any member will feel free to write upon any subject pertinent to the work of the Section.

Prof. Beal has been invited by the Association to present a draft of a model pharmacy law.

Dr. Alpers has consented to present a paper upon the preliminary education necessary for students of colleges of pharmacy.

No doubt either of these gentlemen will gladly welcome suggestions upon these subjects.

Special attention is called to the requirement that all papers to be read before the section must be previously presented to the Chairman of the Section, and in case it is desired to have them printed, ample time must be given. (See date given under Scientific Section.)

CLEMENT B. LOWE, Phila., Pa.

**Section on Practical Pharmacy and Dispensing.** "Just now it would be altogether impossible for any one to say truthfully, the American Pharmaceutical Association pays no attention to the retailer, the actual practitioner of pharmacy. Indeed it paid him every attention during its last annual meeting, at Put-in-Bay.

This Committee is gratified to announce that the little it was able to present, at the end of its first year, was most kindly received. Ample time and interested attention was given the reading of the report and many of the papers presented have been printed in the proceedings. Certainly the Pharmaceutical Press has given our report ample publicity, and, in many instances, favorable editorial comment was made upon it. All this is very encouraging to us, as it must be to the, heretofore, less active members of the association. Nothing is needed to secure recognition for the many accomplished retailers in the membership, but a little effort, a little energy, on their part. If hereafter they fail to receive fair recognition, it must be charged to their own inactivity, their want of ambition.

Everywhere, to-day, there seems to be keen relish for common sense

practical matter, and this is what this Committee wants from you, Mr. Pharmacist — something you know to be good; something you have tried; something you have proven. *No matter how plain or common-place, if it is of a positive quality, we want it.* Again, *we want what you do not know, what you would like to know, and what you can't find out.* If it pertains to your business, and would be helpful, we want it. We want, practically, everything pharmaceutical; what you have, and what you want.

The Committee requests you to keep diaries of your professional work. Write up one or two busy days, noting each movement of interest; tell what you did, and how you did it.

Queries are also very desirable; we will try to answer them. While we prefer that prospective writers of papers should select their own subjects, the Committee will offer these if requested to do so.

As the next meeting will be held in May, you are requested to begin your work at once, and be through in good time."

HENRY P. HYNSON, Baltimore, Md.

The **Oklahoma Pharm. Ass'n.** will meet in Shawnee, April 4 and 5. F. M. Weaver of Oklahoma City is Secretary.

The **Pharm. Ass'n of South Carolina** meets in Charleston in the month of May, the exact date to be fixed later. J. A. Barbot of Charleston is Secretary.

The **Tennessee Druggists' Ass'n** will meet in Kingston Springs, the third Wednesday in July, R. W. Vickers of Murfreesboro, Sec'y.

The **Texas Pharm. Ass'n** meets in Dallas sometime during the month of May, the exact date to be fixed later by the Executive Committee. The Secretary, Mr. R. H. Walker of Gonzales reports the association in a prosperous condition, both financially and as to membership.

According to Secretary W. F. Root, the printed Proceedings of the **Vermont Pharm. Ass'n** are to be issued soon.

PROCEEDINGS RECEIVED:—

South Carolina: Proceedings of the twenty-first annual meeting of the Pharmaceutical Association of the state of South Carolina, held in Charleston, December 14 & 15, 1897.

South Carolina: Proceedings of the twenty-third annual meeting of the Pharmaceutical Association of the state of South Carolina, held in Charleston, May 11 & 12, 1899.

Vermont: Proceedings of the fifth annual meeting of the Vermont State Pharmaceutical Association, held at Montpelier, October 25 & 26, 1899.

New York: Proceedings of the twenty-first annual meeting of the New York State Pharmaceutical Association, held at Albany, June 27—30, 1899.

## Boards of Pharmacy.

Reports of Boards of Pharmacy from the following states have been received: —

Iowa: Tenth Biennial Report of the Commissioner of Pharmacy for the State of Iowa, for the official biennial period ending April 23, 1899.

Kentucky: Report of the Kentucky Board of Pharmacy for the year ending Oct. 11, 1899, followed by

a list of registered pharmacists, arranged alphabetically and by counties. Pamphlet, pp. 182.

Minnesota: Fourteenth annual report of the Minnesota State Board of Pharmacy. Pamphlet, pp. 54.

Wisconsin: Eighteenth annual report of the Wisconsin Board of Pharmacy August, 1899. Pamphlet, pp. 52.

## Bibliography.

Mr. Geo. J. Seabury's book, Shall Pharmacists Become Tradesmen? is one in which druggists who are interested in the N. A. R. D. movement should read. It can be had at cost price upon application to the author. Postage prepaid.

The volumes of Lea's Series of Pocket Text-Books will hereafter be bound in red cloth, heavy beveled edge boards and also in flexible red leather with round corners and with margins trimmed to facilitate carrying in the pocket. The leather bound books will cost 50 cents more than the cloth bound.

Pharmacists who want some good ideas on the housing and arrangement of a model drug collection that will prove an attraction to any drug store should write to Verlag von A. Pichlers Witwe & Sohn, Vienna V, Margaretenplatz 2, for a copy of their catalogue of "Waren-Sammlung."

In addition to two elementary treatises for high schools and academies, by Arey, and by Parrish and Forsyth, Macmillan's last monthly list makes mention of the new revised edition of Thorp's Outlines of industrial chemistry, a text-book for students; and of Walker's Introduction to physical chemistry.

Ueber die Molekulargrösse der Körper im festen und flüssigen Agregatzustande is the title of monograph No. 10, vol. 4 of the "Sammlung chemischer und chem.-technischer Vorträge" edited by Dr. Felix B. Ahrens.

Friedr. Vieweg & Sohn announce the completion of volume 8 of the Jahrbuch der Chemie, which covers the most important advances made in pure and applied chemistry during the year 1898. The chapter on pharmaceutical chemistry is written by Dr. H. Beckurts, Professor of Pharmacy at the Polytechnicum at Braunschweig and editor of the "Jahresbericht der Pharmacie."

Among the new books by John Wiley & Sons are a second edition of Descriptive general chemistry, a text-book for short course by S. E. Tillman, Professor of Chemistry at the U. S. Military Academy; and Determination of radicles in carbon compounds, by Dr. H. Meyer; authorized translation by Dr. Bishop Tingle, Instructor of Chemistry at the Lewis Institute at Chicago.

According to the Chemist and Druggist, M. Andre Pontier's history of French pharmacy, on which he has been at work for so many years, will be ready for publication in two or three months. A compact volume of 600 pages, it will form the most complete modern work on this subject; it embraces practically every point of pharmacy, from the laws and customs of the middle ages to the proceedings of the General Association of French Pharmacists for 1899. The history is, in fact, brought up to May, 1899, and should form interest reading for any pharmacist who

desires to be thoroughly posted on the subject. The text will be interspersed with chromolithographic reproductions of some of the older MSS.

**"Doktor und Apotheker."** — In honor of the hundreth anniversary of the death of the Vienna Composer, Ditter von Dittersdorf, the Berlin Royal Opera played his comical popular opera bearing the above title. Maubach, who in recent years has done more than anyone else in calling attention to the role which the apothecary has played in literature, analyses the play in No. 96 of the Pharm. Ztg. The following extract may serve to show two things: 1) that in those days physicians and apothecaries had their differences as well as to-day; and 2) that in the play under consideration the physician has no reason for considering himself complimented any more than the apothecary. Krautmann (Herbman) is the physician, and Stössel (Pounder) the apothecary.

"Aus dem zweiten Akte erfahren wir, dass auch in früherer Zeit Arzt und Apotheker nicht immer zwei Seelen und ein Gedanke waren. Ein seine erheiternde Wirkung immer noch ausübendes Duett, welches indess durch die angepasste Musik erst recht zur Geltung kommt, illustrirt recht drastisch einen Streit zwischen Beiden und sei desshalb dem freundlichen Leser nicht vorenthalten:

Krautmann: Sie sind ein Charlatan,
ein Ignorant,
Stössel: Ich bin ein weiser Mann,
ein Laborant.
Krautmann: Ein Schrecken für Gesunde,
Ein Doktor nur für Hunde.
Stössel: Das spricht der Neid aus Ihnen,
Es zeigens Ihre Mienen.
— — — — — — — —
Krautmann: — ich ford're Sie zur Fakultät
Und vor die Universität.
Stössel: Da werd' ich dann wie Cato sprechen,
Und Sie zum allgemeinen Wohl,
Mein Herr, beschämen, wie ich soll.
Krautmann: Was, er will mich beschämen?
Stössel: Ja, Ihn will ich beschämen.
Beide: Verdammter Charlatan!
Nun halt' ich mich nicht mehr;
Ich will, bei meiner Ehr',
Dir schon das Handwerk legen.
Zu Boden, Ignorant!
Krautmann: Du Pillenfabrikant!
Stössel: Rezeptenfabrikant!"

**The Lloyd Museum and Library.** "This library is devoted to botany, pharmacy, chemistry and allied sciences. The building contains between fifteen and twenty thousand volumes and pamphlets on the aforenamed subjects. The herbarium of pressed plants is extensive and the mycological department contains four or five thousand specimens, the fleshy fungi being preserved in alcohol in jars. This library is incorporated, is free to the public, and is pledged to be donated intact to science. The final resting place has not been decided upon, but the library will be placed in the University best calculated to serve science."

The above modest announcement is signed by the brothers J. U. and C. G. Lloyd, the latter of whom is at present on a several months' trip

to the Samoan and Fiji Islands gathering material for his mycological collection. The collections of books and plants stored away in that plain brick building in West Court Street, Cincinnati, have become of such importance that every American pharmacist may feel proud of what is there being accomplished for American pharmaceutical and botanical science.

That Professor Lloyd is not only a scientific investigator, but also a writer of fiction, is well known to the readers of the Review. Those who have read his "Etidorhpa" and his more recent "On the Right Side of the Car," will be pleased to learn that a new serial story from his pen is to appear in "The Bookman." The proceeds from the seven editions of "Etidorpha" have been turned over to the Lloyd Library. That "Stringtown on the Pike" will be fully as successful, those who have had the pleasure to listen to Professor Lloyd's selections of it, have no doubt. That it may prove a further boon to the Library should be the desire of all interested in American pharmaceutical and botanical science. For the benefit of those who have not yet heard of "Stringtown on the Pike," the following announcement from "The Bookman" is herewith reproduced:

"The editors of 'The Bookman' consider themselves fortunate in having secured as their serial story for 1900 a novel by an American author, John Uri Lloyd, who, although unknown as yet as a writer of fiction, is believed to deserve a foremost place among the newer American novelists.

"The story is entitled Stringtown on the Pike, and it will be published in about ten numbers of The Bookman, beginning in March.

"Stringtown on the Pike is a novel that none but an American could write. It is drenched with the American spirit and rooted in American traditions. It is a work that could only be produced by one who has brooded long and patiently over the types and forms which are unified into a drama of American life on a large scale. Stringtown on the Pike has its rise and progress and close in one little obscure and undiscovered corner of the land, a Kentucky village. It does all that Mary Wilkins and others have done for a narrow circle of American life, but it has a significance and sweep and human intensity which takes in the universe by touching life at the base.

"The characters are well defined and distinctly wrought out. That of the Red-haired Boy has a characteristic note and sturdy individuality that make him unusually attractive and strong. The heroine has that sort of elusive, shy, untamed nature whose next act cannot be calculated upon, that puts her among that portion of her sex which is hard to be classified. The old villagers, the Judge, the Professor, the Clergyman, the Colonel, etc., impress one so vividly and clearly that one feels that they are drawn to the life. But of all the characters in the story none can be said to be so distinctly a creation of which any author might be proud as old Cupe. He is the great triumph of Stringtown on the Pike. If for no other reason, this character would lift the book far above mediocrity and give it distinction and literary achievement worthy of a noble pen. Cupe, proud, kindly, dignified, last scion of an ancient

African monarchy, is every inch the King he claims to be by hereditary right. He dominates the story as does his fateful spell. He threads its situations and crowns its action in the climax of the novel.

"In the telling of the story Mr. Lloyd is simple, yet strong; lucid, yet forceful in diction; eschewing literary forms, yet falling naturally into a spontaneous narrative style that has a grace of its own.

"Stringtown on the Pike is a story that will increase our pride and strengthen our faith in the existence of an American literature."

CATALOGUES RECEIVED:—

J.-B. Baillière et Fils—Paris. Le mois medico-chirurgical. November 1899 and January 1900.

F. A. Brockhaus—Leipzig. Monthly list of new books. December 1899.

A. S. Clark—New York. Catalogue No. 49.

Lemcke & Buechner—New York. 1. List of choice standard works for every library. 2. Monthly bulletin of world-literature. August and September 1899.

The Macmillan Company—New York. Book reviews. January 1900.

A. Pichlers Witwe & Sohn—Wien. Wandtafeln für Warenkunde und Mikroskopie von Dr. Carl Hassack.

B. G. Teubner—Leipzig. Mitteilungen. No. 5 and 6. 1899.

U. S. Dept. of Agr.—Washington. Monthly list of publications. December 1899.

H. Welter—Paris. 1. Catalogue mensuel No. 61. Anthropologie et Zoologie. Catalogue No. 113. Bibliographie méthodique des livres de médecine. 1880—1900.

## Commercial.

**Pharmaceutical Stills exempt from Tax.**—According to the Pharmaceutical Era (vol. 23, p. 68), on January 10 the Commissioner of Internal Revenue issued the following ruling concerning stills for pharmaceutical purposes:

"The manufacturer of a still that is to be used only for pharmaceutical purposes, or for distillation of volatile oils, is not required to pay special tax thereon, provided he furnish to the collector evidence under oath, setting forth the purpose for which the still is to be used.

"Every still, immediately upon being set up, must be registered with the collector in strict compliance with the provisions of section 3258, Revised Statutes."

PRICELISTS RECEIVED:—

Druggists' Circular—New York: Price list for January 1900.

Eimer & Amend—New York. 1) Revised catalogue of bacteriological apparatus 1899. 2) Chemical and physical apparatus and assay goods. 1899.

Fritzsche Brothers—New York. Price list for January, 1900.

J. Paul Liebe—Dresden. Preisliste Fabrik medicinisch-diätetischer Präparate. Herbst 1899.

Mariner & Hoskins—Chicago. Hoskins' patent hydro-carbon blowpipe and furnaces.

Max Kaehler & Martini—Berlin. Special-Listen: No. 1. Apparate zum Gebrauche in Vorlesungen, Demonstrations-Apparate, No. 2. Apparate zur Elektro-Analyse. No. 3. Apparate zur wissenschaftlichen und technischen Gasanalyse. 1900.

H. K. Mulford Co.—Philadelphia. Price list of soluble compressed tablets. October, 1899.

E. R. Squibb & Sons—Brooklyn. Semi-annual price list of standard pharmaceutical preparations. January, 1900.

A. H. Thomas—Philadelphia. Price list of precision balances for analytical and assay purposes.

# Pharmaceutical Review.

VOLUME 18. **MARCH, 1900.** NUMBER 3.

## Editorial.

As a nation we have hardly begun to realize the significance of traditions, yet we may have some idea of the sentiment of an apothecary who is proprietor of a pharmacy that has been in the possession of his family for more than two centuries and who is so discontent with the present status of pharmacy that he feels constrained to sell his apothecary shop. Commenting on the condition of pharmacy in Germany, an apothecary writes to the Pharmaceutische Zeitung as follows: "As shown by documentary evidence, my pharmacy has been in constant possession of my family since 1685, possibly longer. Although I have two sons, I am not willing to let them become apothecaries. I shall, therefore, be constrained to sell my pharmacy, which never before has been sold. The conditions are becoming more and more vexations." We do not quote this in order to engender like pessimism on this side of the water. It ought to teach us, however, to be careful to adopt so-called reforms in this country that have failed in Europe.

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The results of the examinations for 1899 as reported at a recent Council meeting of the Pharmaceutical Society of Great Britain are of more than local interest. Of 1530 candidates examined only 723 passed, and 807 or 52.75 p. c. failed. These figures acquire a greater significance if analysed. Of the total but a small number, viz. 103, presented themselves for the major examination: 100 in London and only 3 in Edinburg. Of the former only 49 passed and of the latter

but 1. Of the candidates for the minor examination 954 out of 1331 or 71.67 p. c., failed in London; and 310 out of 485, or 63.91 p. c., failed in Edinburg.

Owing to deaths and other causes, the register on Dec. 31, 1899 showed 15,595 names, or but 122 more than the year previous. Of this number 2,248 are Pharmaceutical chemists and 13,347 Chemists and druggists. The Society has 6,704 subscribers on its records.

The question was raised whether the failures in the Minor were entirely due to the ignorance of the student, or in part to the overzeal of the examiners. Attention was also called to the fact that the high proportion of failures was contemporaneous with the advent of professorial examiners. The explanation given was that the present large proportion of failures was due in a measure to the large number who wished to avoid the ten guinea fee looming up in the distance, and to the evident fact that dispensing was not taught so well as formerly, for many of the failures were in practical dispensing. It was also pointed out that the notion that professorial examiners demanded too much in their special branches had been exploded long ago, that pharmaceutical examiners were much more exacting than professorial examiners. The latter had more experience in teaching the young and knew better what to expect.

Incidentally it may be of interest to call attention to the fact that at a recent examination the Wisconsin Board of Pharmacy failed even a larger percentage of candidates than did their British confrères, and that a large percentage of failures is rather common in this country where scarcely any of the boards contain professorial members. That the percentage of failures in this country would increase if our boards generally demanded a practical test of the candidate's skill in dispensing will hardly be doubted.

The general complaint in England seems to be that to crowd an examination into two days is an injustice to the candidate and engenders cramming rather than a habit of study. Interested persons are, therefore, desirous of having the examination divided and a course of study prescribed by law as a prerequisite.

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To call attention to the high educational standard of German universities and polytechnicums at the close of the nineteenth century is shear waste of time. It is well to understand, however, that whereas to-day as much as 10 percent of the attendants at these

institutions are foreigners, at the beginning of this century many Germans went to foreign countries to get their higher education. Germany has at present 22 universities with about 2500 professors and docents and 32,000 students. The cost of maintenance is about $5,625,000.00 annually. In other words Germany maintains one instructor for less than 13 students, and pays a little more than $175.00 for the education of each university student.

In addition there are 9 technical high schools with 11,000 students and 850 professors and docents, and an annual cost of $1,250,000.00. There are, furthermore, 18 professional high schools* with 3500 students and 350 instructors, the maintenance of which costs $1,000,000.00. Exclusive of the military and marine academies, about 46,000 to 47,000 young men receive instruction of a higher grade and the expense aggregates more than $8,000,000.00 annually.

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Not long ago the writer had occasion to call on the Governor of his state. Upon leaving the executive office, his facial expression probably revealed a sense of satisfaction with the results of the audience, for upon passing through the ante-chamber he was greeted with a "You got what you wanted?" accompanied by a significant smile on part of the janitor. So many Americans have gotten into the habit of considering our forms of government, municipal, state and national, as so many lemons to be squeezed that it apparently has become impossible for anyone to call e. g. on a governor of a state without being suspected of private personal motives.

Many people who can not share the spoils of the politicians try "to get even" with the government in other ways. Thus e. g. many people returning from Europe evidence no scruples whatever in smuggling presents for members of their family or personal friends into this country. Indeed a lawyer, moreover a teacher of young law students, several years ago told the writer that he considered our high tariff an outrage upon the people, that it was intended to benefit only a few wealthy manufacturers, and that for this reason he regarded himself perfectly justified in "beating" these protected few where- and whenever he could.

With such sentiment on the part of a host of people who are strictly honest in all other dealings, it should surprise no one that

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* A German "high" school does not correspond to our grade of schools known by that name. The universities and polytechnicums are the "Hochschulen" of Germany.

among druggists also the sense of "offense and a just way of getting even" is to be found. On one of the advertising pages of this number will be found the statement of legal prosecutions by a New York agency of a German firm against various persons for violating the laws of this country. It is not our intention here to argue for or against our present patent laws. The Review has frequently expressed its position with regard to these. Neither do we want to discuss the justice or injustice of selling one and the same article in Canada at one price and in the United States at another. The druggists of this country should make a careful study of these questions and then face the issue intelligently and squarely.

The publication of legitimate advertising matter in the advertising pages of a journal should not be made an excuse for a special advertisement in the editorial columns. However, the court reports referred to are being presented in one way or another to all of the druggists of this country. A similar occasion for a few words as a plea for a finer sense of honor may not very soon present itself.

To a thoughtful observer the prescription of fluid extracts, so and so's manufacture, must have seemed like a *fin de siècle* scientific and economic absurdity. Yet we must grant that such specification has become very largely a necessity on part of the physician to protect his patient and himself. To the druggist, however, it is a hardship. To keep a dozen brands of the same fluid extract may mean financial ruin; not to have them on his shelves may result in the loss of the confidence of the physicians. These may and do resort to dispensing of their own medicaments and again financial loss stares the druggist in the face.

It requires strong men to meet the conditions of modern pharmacy, strong morally as well as commercially and scientifically. The pharmacist should have the utmost confidence of the physician and his patients. Aside from pecuniary motives, a fine sense of honor should induce him to seek it and when found to maintain it. To be arraigned in court for substitution of any kind, however, must necessarily deal a severe blow to this confidence. It is bad enough if innocently brought into such publicity, but to subject oneself to it for the sake of small gain ought to be well-nigh impossible. The druggists of this country have an obligation, not only to their patrons, but to themselves and their successors.

# Pharmacopœial Revision of Galenicals and Solvents.

General Introduction by *Edward Kremers.*

As one reason why the Kneipp remedies have proven so popular has been mentioned the fact that regular physicians in recent years neglected that class of remedial agents commonly termed galenicals. It has been further claimed that the human body demands vegetable remedies, and that if these were not supplied by scientifically educated physicians, people when in need of medicaments would obtain these through other chanels.

How much or how little truth there is to the above claim we are not in a position to state. Possibly no one can scientifically prove or absolutely disprove it. It is worth while, however, to couple with this rather bold claim the assertion of one who may be regarded as an authority on the subject of modern organic synthetics, that the forcing upon our modern materia medica of a host of new remedies fresh from the chemical laboratories has done the cause of these synthetic preparations much harm, that many of these are of questionable therapeutic value.

Whether any organic connection exists between the causes that have led to these two statements, we are again not in a position to state. That they should have been made at about the same time may have been merely a matter of chance. What we do know positively, however, is that the study of vegetable drugs and galenical preparations derived therefrom has received a strong impetus within recent years. We also have the statement from one of the largest manufacturing houses that fluid extracts and similar galenicals are being demanded in larger quantities than ever before. Both pharmacognosy and galenical pharmacy are being placed on a modern scientific basis. The works of Arthur Meyer and of Tschirch and Oesterle demonstrate in a general way what has been done and is at present being accomplished on the botanical side of vegetable pharmacognosy. Numerous contributions on individual drugs etc. reveal how plant physiology as well as plant histology is becoming an important factor in the study of vegetable drugs. On the chemical side we as yet have no work that deals with the constituents of all classes of vegetable drugs in the light of recent chemical advancements. Contributions on individual drugs and drug constituents, however, are wellnigh legion. An excellent beginning in bringing together all

recent knowledge on one subject, namely that of volatile oils, has been made in the classical treatise of Gildemeister and Hoffmann.*

A modern scientific pharmacognosy is naturally an essential prerequisite to a rational preparation of galenicals. Pharmacognosy, organical and physical chemistry, pharmacology and, last but not least, mechanical ingenuity and skill are at present revolutionizing our antiquated ideas and methods of galenical pharmacy. We no longer accept good looks or a peculiar style of cells as sufficient criterion of the value of a drug; we no longer are satisfied that a drug collected according to the calendar and dried according to the rules of ignorant drug collectors is a guarantee that it contains the active constituents in proper amounts; we no longer consider the chemical assay of a therapeutically valueless or possibly even objectionable constituent as a sufficient criterion of its therapeutic efficiency; we no longer will accept a preparation that has been subjected to rough treatment, so to speak, as a fit representative of modern pharmaceutical art.

But while we have learned to treat drugs as individuals from a botanical and pharmacological standpoint, chemico-pharmaceutically we still lose too much sight of their individuality. For example, we have been very well satisfied with the use of a mixture of alcohol and water as a solvent in the manufacture of galenical preparations. Such a mixture seemed to exhaust the drug very well, it left at least some if not most of the "plant dirt"† behind, the preparations showed fair keeping qualities if alcohol was employed in the proper proportion. It is true, we knew that alcohol was a general solvent for alkaloids, glucosides and other groups of active constituents. What was more, we knew from long experience that preparations thus prepared possessed as a rule in large measure the therapeutic properties of the crude drugs from which they were prepared.

However, while on the one hand the botanical and chemical study of vegetable drugs was making rapid progress, the methods of making galenical preparations from them were not subjected to scientific inquiry in harmony with modern scientific progress. Color, taste, specific gravity, weight of evaporated extract and similar criteria are altogether too much in evidence as compared with a careful chemical and pharmacological study.

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* Die ätherischen Oele.
† See J. U. Lloyd, this journal, vol. 11, p. 291.

It is true that our knowledge of plant constituents is still in its infancy and that the solution of many problems in galenical pharmacy can not be expected until the constitution of more of the therapeutically important plant constituents has been revealed. This is no reason, however, why we should not apply that knowledge which has already been acquired in the domains of organic and physical chemistry.

Physical chemistry has advanced by leaps and bounds during the past two decades largely because of its modern theory of solutions. The advancement due to this theory was so great that most scientists did not recognize its one-sidedness. It is only very recently that physical chemists are awakening to the fact that there are other solvents than water, scientifically if not practically as important. Strange as it may seem, it is just as recent that pharmaceutical investigators are beginning to apply well-known physico-chemical facts to the study of galenical preparations. Organic chemistry has also brought forth several facts (e. g. on vegetable ferments in drug plants) along new lines that will make it necessary to take up the study of galenicals in an entirely new light.

The principal *raison d'être* of galenical preparations from vegetable drugs is to bring their therapeutically active constituents into a more convenient form of administration. Assuming that the drug therapeutically represents the live plant in whole or in part, the object of the solvent is to extract the active constituents in their entirety and unchanged, and to leave as much as possible of the therapeutically inert constituents behind. There are exceptions, which in some instances may be as important as the rule. It is well, however, to have this rule clearly before us in order that we may more properly understand the function of the solvent and of other chemical and physical reagents employed.

Whereas the above statement that "the object of the solvent is to extract the active constituents in their entirety and unchanged" will possibly not be contradicted by many, yet such an achievement may be regarded as a practical impossibility. It would be more in harmony with the facts to state that the prime object of the solvent is to secure a preparation of as definite therapeutical value as possible, whether it be that of the original plant, of the drug or only akin to it. A therapeutic agent of known properties is wanted whatever these properties may be, so long as these properties serve as efficient

tools in combatting disease. As a rule, however, it is desired that the therapeutic effect of the galenical agree with that of the crude drug as closely as is possible. The question of solvent is, therefore, of the utmost importance.

Inasmuch as the question of the substitution of acetic acid for alcohol has been brought forth prominently, and further since our Pharmacopœia is soon to be revised, it may be well to review briefly the question of solvents and of other physico-chemical and chemical agents that play a more or less important role in the manufacture of galenical preparations.

Before taking up the various solvents etc., it may be well to call attention to two fundamentally important facts which have been emphasized anew within recent years.

1. To extract the therapeutically valuable constituents from the plant organism in their entirety and in the unaltered state, leaving as much of the "plant dirt" behind as possible. The expression "plant dirt" seems to owe its introduction into pharmaceutical literature to Professor Lloyd, who has done excellent work along this line as will become apparent upon a comparison of his galenicals with corresponding pharmacopœial preparations. A move in another direction has been made in recent years by the firm of Golaz & Cie.* of Saxon, Switzerland. As far as possible, fresh plants are used and their juice subjected to a process of dialysis, avoiding as much as possible all solvents and reagents that might produce chemical change. From a purely scientific standpoint the process certainly seems to approximate the ideal. Whether these new dialysates will meet with practical success, remains to be seen. It may be added that the promotors recognize the therapeutic differences inherent even in fresh plants and that the finished preparations of powerful drugs are assayed pharmacologically as well as chemically whenever possible.

2. The necessity of regarding drugs as individuals more than has been done in the past. To a certain extent this is being done more and more by the larger manufacturers. That the study of individuality should be extended even to such preparations as infusions has also been pointed out.†

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* Apt. Ztg. and Gehe's Handelsbericht.
† This journal, vol. 17, p. 78.

(To be continued.)

# The Effect of Certain Alkaloids upon Paramecium.

By *E. V. Wilcox.*

While studying the poisonous action of *Delphinium menziesii* upon domestic animals, the writer attempted to determine as accurately as possible the interaction between the alkaloids found in this species and the remedies which were applied for counteracting their poisonous effects. As the alkaloids of this species of larkspur have not yet been definitely isolated in a considerable quantity, simple chloroform and benzol extracts of the plants were employed.

A species of Paramecium, which had been kept in a jar of water for class use, had multiplied to such enormous numbers that it was decided to test their reaction to certain alkaloids with which experiments were being conducted at that time. The list of alkaloids which were used included apomorphine, atropine, caffeine, tincture of digitalis, tincture of aconite, delphinine, delphinoidine, and chloroform and benzol extracts of *Delphinium menziesii.**

The method of observation was very simple. A single drop of water containing Paramecia was placed in a circular excavation on a thick slide. The alkaloid to be experimented with was then either brought in contact with the drop of water at one side or introduced into the center of the drop. The atropine was diluted in a solution of camphor water. The other alkaloids, with the exception of the tinctures of digitalis and aconite, were used in a dry, finely pulverized form.

As is well known, Paramecium in drops of water seeks that part of the drops where the percentage of carbon dioxide is relatively highest, which, under ordinary circumstances, is the center of the drops. The alkaloids which were used are slowly and only slightly soluble in water, and their action upon Paramecia was not manifested at once. The slight solubility of the alkaloids, however, brings with it the considerable advantage that one may easily observe the reaction of Paramecia to the smallest quantity of the alkaloid which will produce any noticeable effect. The quantitative determination of the percentage of the alkaloid in the drop was not made.

When minute granules of caffeine were introduced into a drop of water containing Paramecia, the activity of the Paramecia was soon

* Montana Experiment Station Bulletin No. 15.

increased. They were apparently attracted by the caffeine and circled about in contact with the small granules. As more and more caffeine passed into solution, however, the direction of the stroke of the cilia was reversed and the Paramecia died with the cilia extended. It was found that when Paramecia were kept for several days in water which contained the merest trace of caffeine, they became somewhat acclimatized to this substance and could then endure caffeine in a stronger solution.

When a small granule of apomorphine was placed in contact with one side of the drop, the Paramecia immediately moved away to the opposite side of the drop, showed symptoms of progressive stupefaction, and died after ten minutes' exposure. The form of the body did not change under the influence of apomorphine.

In experimenting with delphinine, it was noticed that the Paramecia were not repelled by this substance, but it is of interest to observe that they soon sought the surface of the drop and died in that situation. If atropine was added after the Paramecia were driven to the surface of the drop by delphinine, they quickly returned to the center of the drop and recovered from the effects of the delphinine provided that care was exercised not to introduce too much atropine. In the presence of an excessive quantity of atropine, the movements of the Paramecia became violent and irregular. The atropine seemed to act as a strong stimulant of protoplasmic contraction. The cell bodies became almost perfect spheres, rotated for some time in this condition, and died without relaxation. During these experiments delphinoidine was observed to produce effects which were scarcely to be distinguished from those of delphinine. The former acted rather more promptly and powerfully than the latter. Delphinoidine seemed to exercise a decidedly repellent action on the Paramecia. Again, with aconite quite similar results were obtained.

With careful manipulation, the Paramecia could be to a limited extent acclimatized to any of the substances which were employed. This acquired increase of resistance, however, was of only short duration. Moreover, it was observed that there was a distinct antagonism in physiological reaction between certain of the alkaloids, for example, delphinine and delphinoidine and aconite produced a slowly progressive depressant effect, stupefaction, and marked relaxation of the protoplasm. Atropine and digitalis, on the other hand, produced quite opposite effects and either one when added carefully

to a drop counteracted in a striking manner the action of aconite, delphinine, delphinoidine, or the extracts of *Delphinium menziesii.*

The last four named alkaloids caused one pretty uniform reaction of the Paramecia, for which no good explanation seems to be at hand. The Paramecia under the influence of these substances left the center of the drop of water and remained os close as possible to the surface film. Whether under the influence of these substances the Paramecia require more oxygen than under normal circumstances, or whether some other chemical or physical factor determined this change of habit, cold not be decided.

Department of Agriculture, Washington, D. C.

# A Comparison of some Formaldehyde Tests.*

By *B. M. Pilhashy.*

Having had occasion to make some qualitative tests to show the presence of formaldehyde, I reviewed the recent chemistry for the detection of formaldehyde. In some instances the reaction given for formaldehyde proved to be true for other aldehydes also and apparently for distilled water. In some cases the delicacy of the reaction given for a particular reagent was not true for the stated dilution, while in others the reaction was clear and not to be doubted. The following summary of various reactions for the commoner aldehydes may prove useful to others, who may have occasion to work in the same line.

a) Schiff's reagent. Most aldehydes in dilute solutions give a violet coloration with the reagent. (Fuchsin decolorized by sulfurous acid.) This can also be obtained by mere exposure of the reagent to the air or by warming the suspected liquid with the reagent even in the absence of an aldehyde.[1]

b) Phenol and sulfuric acid. Most aldehydes give with very dilute phenol and sulfuric acid, added to form a layer beneath, a scarlet ring changing to dark red on heating.[1]

c) Diazobenzenesulfonic acid. Most aldehydes with this reagent in the presence of free alkali and sodium amalgam give an intense violet color at once or within twenty minutes. The colors are destroyed by exposure or by acid.[1]

* Read at the Cincinnati Section of the American Chemical Society.

d) Nessler's solution. Acet aldehyde as well as formaldehyde gives a precipitate with Nessler's solution. They also give a precipitate with aniline.[1]

(e) Dimethylaniline and sulfuric acid. Trillat gives the following reaction for formaldehyde alone. To a dilute solution a few drops of sulfuric acid and also of dimethylaniline are added. The mixture is heated for half an hour on a water bath, made alkaline and further heated to drive off the excess of dimethylaniline, which can be detected by its odor. The liquid is then filtered and the paper moistened with acetic acid. If formaldehyde is present, a blue coloration results when lead dioxide is then sprinkled on the paper.[2]

The following experiments tend to show that this reaction is due to dimethylaniline present.

**Experiment 1.**

If a piece of filter paper be moistened with a very dilute solution of dimethylaniline in water, it will give the blue color reaction with lead dioxide and acetic acid.

**Experiment 2.**

Twenty cc. of distilled water, two drops of sulfuric acid and one drop of dimethylaniline were mixed, forming a very dilute acid solution. This was heated one-half hour, during which time 100 cc. distilled water were added at intervals to replace that evaporated. After heating a while, a strip of filter paper dipped into this solution gave a yellow color with lead dioxide and acetic acid. Another strip dipped into the solution and made alkaline with ammonium hydrate or sodium carbonate solution gave a slight blue after ten minutes. At the end of the heating, these reactions could not be again obtained, pointing to a probable volatilization of the salt formed.

**Experiment 3.**

Instead of the distilled water in experiment 2, 20 cc. of 1:1000 formaldehyde solution were used. After heating for one-half hour, a strip of filter paper moistened with the solution gave the yellow color observed in experiment 2, with the lead peroxide and acetic acid and the blue color with the same reagents after making alkaline. The outside of the dish was coated with a yellow salt, which was washed into a dish made alkaline and filtered. The filter paper gave the afore-mentioned blue reaction.

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[1] Allen, 3rd ed., vol. 1, p. 217.
[2] Ibidem, p. 220.

**Experiment 4.**

A few drops of dimethylaniline were dissolved in water with the aid of a few drops of sulfuric acid. A strip of paper moistened with it gave the yellow reaction with lead peroxide and acetic acid. The solution was neutralized and filtered. The filter paper as well as a strip moistened with the solution gave the blue coloration as above.

**Experiment 5.**

Twenty cc. 1:1000 formaldehyde solution, 2 drops of sulfuric acid and 1 drop of dimethylaniline were treated for one-half hour, made alkaline with sodium hydrate solution and then heated for one hour longer to drive off any free dimethylaniline in excess. There was no odor to the solution which was filtered. The filter paper gave no blue coloration with lead peroxide and acetic acid.

**Summary.**

From the foregoing experiments it seems that Trillat's test does not show the presence of formaldehyde, but of dimethylaniline or its salts when not completely volatilized.

f) Lebbin's test.[2] This is said to be delicate enough to detect one part of formaldehyde in 10 million parts of water. In my experience 1 in 200,000 seems to be the limit.

g) Morphine hydrochloride[3] with sulfuric acid is not to be considered sensitive enough for formaldehyde in a more than 1:1000 solution, a purple ring being obtained.

h) Phenylhydrazine hydrochloride[4] seems to be the best reagent for formaldehyde. The solution of 1 gram of phenylhydrazine hydrochloride with 1.5 grams of sodium acetate in 10 cc. water is used. To one cc. of the liquid two drops of the reagent and two drops of sulfuric acid are added, producing a green coloration. In as dilute a solution as 1:10,000 or 1:100,000, 3 cc. of the liquid with 4 drops of the reagent and 4 drops of sulfuric acid heated for half a minute bring out the color. For 1:250,000, 3 cc. of the liquid with 5 drops of the reagent and 5 drops sulfuric acid heated for about a minute give a very light tinge of green after three minutes, a decided tint after 10 minutes.

i) Rimini[5] uses phenylhydrazine hydrochloride with sodium nitroprusside and concentrated sodium hydrate, a blue coloration resulting. One in one thousand and 1:10,000 give an intense blue when 1 cc.

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[3] Jour. Soc. Chem. Ind. Abs., '98, p. 955.
[4] " " " " " " p. 954.
[5] " " " " " " p. 697.

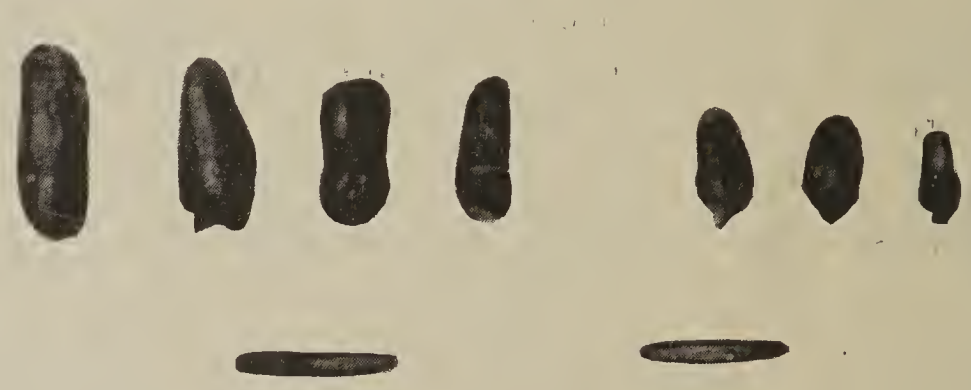
of the solution is mixed with 2 drops each of phenylhydrazine hydrochloride solution and of sodium nitroprusside solution, 1 cc. of caustic soda solution being then added. One in one hundred thousand gives a deep blue and 1:1,000,000 a light blue. These blues change quickly to green, yellow, light brown and red. A peculiarity is the rise of the red color to the top leaving a yellow layer below. Both layers are clear solutions. If the same amount of reagent as given above be added to dilutions greater than 1:1,000,000, about the same shade of blue is gotten for them, hence the limit seems to be 1:1,000,000.

## Ergot from Wild Rice.

By *R. H. Denniston.*

A sample of wild rice obtained from the Djiba Indians of northern Wisconsin by Mr. A. E. Jenks has recently been presented to the drug museum.

Mr. Jenks has spent considerable time with this tribe on their reservation in Sawyer County, Wisconsin, studying the habits, customs and life of the people. The results of this study have been embodied in a thesis on "The Wild Rice Eaters of Northern Wisconsin," which has been accepted for publication by the Department of Ethnology at Washington.



The objects in the upper row are ergot grains. The two lower objects are grains of wild rice.

In the sample of wild rice were found a number of ergot grains. These are called by the Indians "frozen kernels" and are similar to the official ergot in color and odor, but differ in size and shape. They are externally of a dark purplish color, internally pinkish or

light purple, varying in length from 5 to 15 mm. and in thickness from 3 to 6 mm. A cross section of the ergot grain shows a mass of hyphal elements.

The occurrence of *Claviceps purpurea* Tulasne upon the wild rice, *Zizania aquatica* L. as a host plant has not been mentioned by Saccardo in his "Sylloge Fungorum."

In view of the recent advance in price of ergot it would be interesting to know if this ergot from the wild rice contains as large a percentage of active constituents as the official ergot.

E. R. Squibb[1] gives the medicinal values of ergots occurring on the common grains as follows: rye, wheat, barley and oats in the order mentioned.

Bousquet,[2] however, states, that the ergot of oats is as prompt and lasting in action as that of rye.

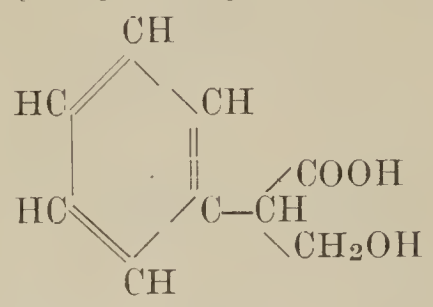
Department of Pharmacognosy,
University of Wisconsin.

# Notes on Modern Alkaloid Investigations.*

The highly interesting tropine group is somewhat further cleared up. Nevertheless it has not been possible to give a definite decision as to the correctness of the proposed constitutional formulas.

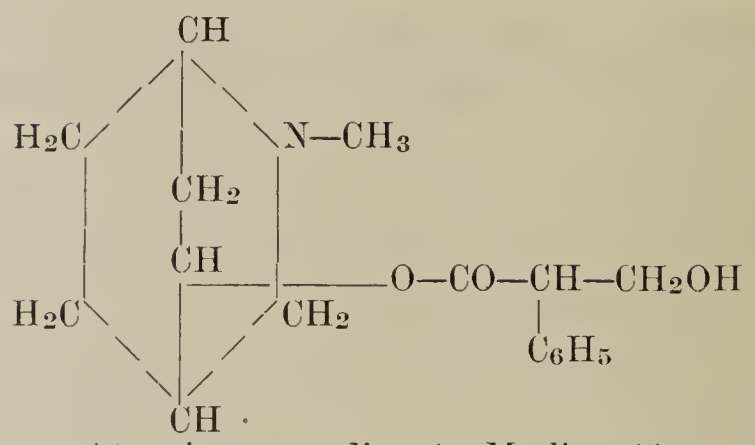
The relations of the individual bases to each other are known.

Atropine (isomeric with hyoscyamine) is a compound of tropine with tropic acid, $\alpha$-phenyl hydracrylic acid.



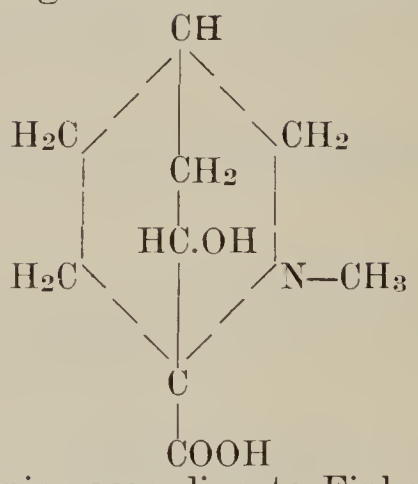

By treating with hydrochloric acid or baryta water, atropine is decomposed into its components. Conversely, Ladenburg has obtained atropine by evaporating a solution of tropine and tropic acid in dilute hydrochloric acid.

1 Proc. Am. Pharm. Ass'n., 16, p. 89.
2 Am. Jour. Pharm., 60, p. 388; from Union Méd., 1888.
* Continued from page 70.

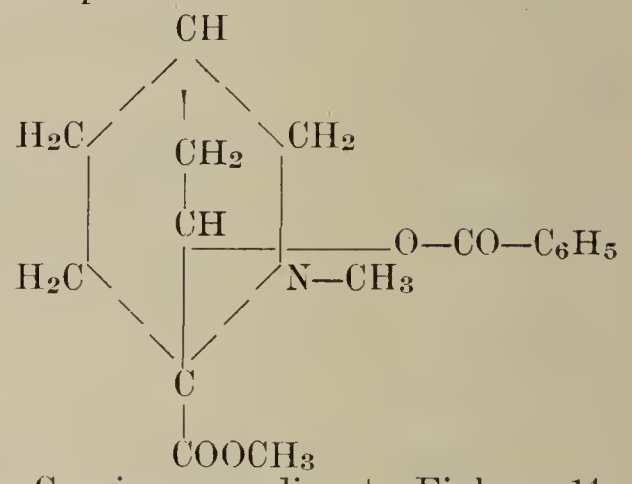



Atropine according to Merling.[12]

Ecgonine is the carbonic acid of tropine




Ecgonine according to Einhorn.[13]

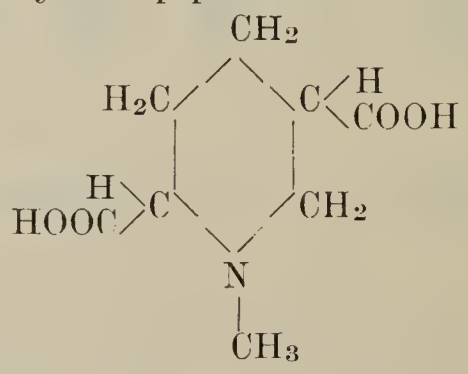



Cocaine according to Einhorn.[14]

and cocaine is the benzoyl methyl ester of ecgonine

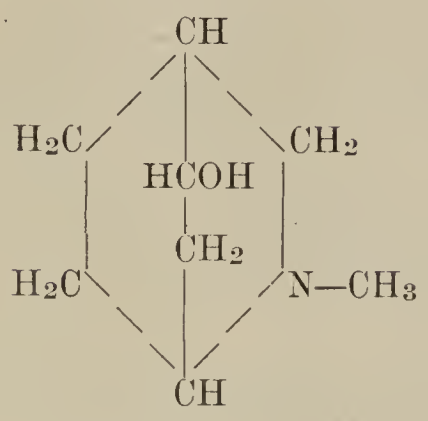
Although the derivation of the different important bases, one from the other, is thus clearly expressed, it has not yet been possible to give with absolute certainty the formula for tropine itself.

Ladenburg obtained from tropine, by splitting off water, tropidine. The latter yielded with potassium permanganate tropinic acid, which he considered as n-methyl-3-6-piperidine dicarbonic acid.




According to Ladenburg's tropine formula, in which he assumed the side chain $—CH_2—CH_2OH$, only a monocarbonic acid should have been formed. Merling, therefore, explains the formation of a dibasic acid by the following formula.

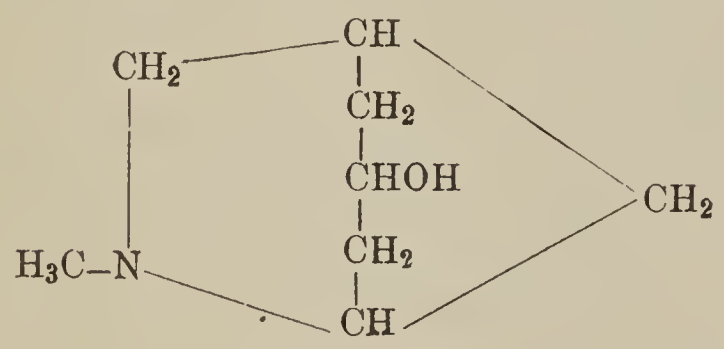
[12] G. Merling, Ueber Tropin. Ber. 24, p. 3108.
[13] A. Einhorn, Ueber die Konstitution des Anhydroecgonins. Ber. 26, p. 324.
[14] A. Einhorn and R. Willstaetter. Ber. 27, p. 2439.



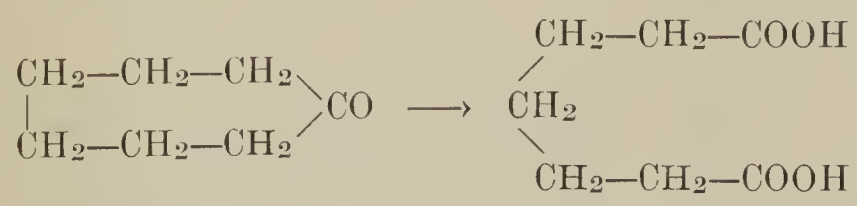

Tropine according to Merling.[15]

The characteristic of his conception lies in the assumption of a para bond. The formation of the dibasic tropinic acid, as well as the production of dihydrobenzene derivatives by exhaustive methylation, is readily explained.

Willstaetter[16] in his work came to the conclusion that tropine contained a pyrrolidine ring. By splitting the tropinic acid ester iodmethylate and the unsaturated methyltropinic acid, respectively, he obtained normal adipinic acid, formic acid, and dimethyl amine. He considered tropinic acid as the carbonacetic acid of n-methyl pyrrolidine and gave to tropine the following formula:




In a latter article he published, however, the "Abbau" of tropinic acid to suberone and to pimelinic acid.




Suberone. Pimelinic acid.

Willstaetter thus furnished a new proof that tropine had an underlying ring of seven members. According to his view the system represents a combination of n-methyl pyrrolidine with n-methyl piperidine, and tropine corresponds to the following formula:

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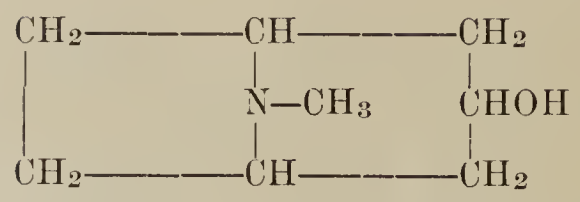
15 G. Merling. Ber. 24, p. 3108.
16 R. Willstaetter, Ueber die Konstitution des Tropins. Ber. 30, p. 2679.

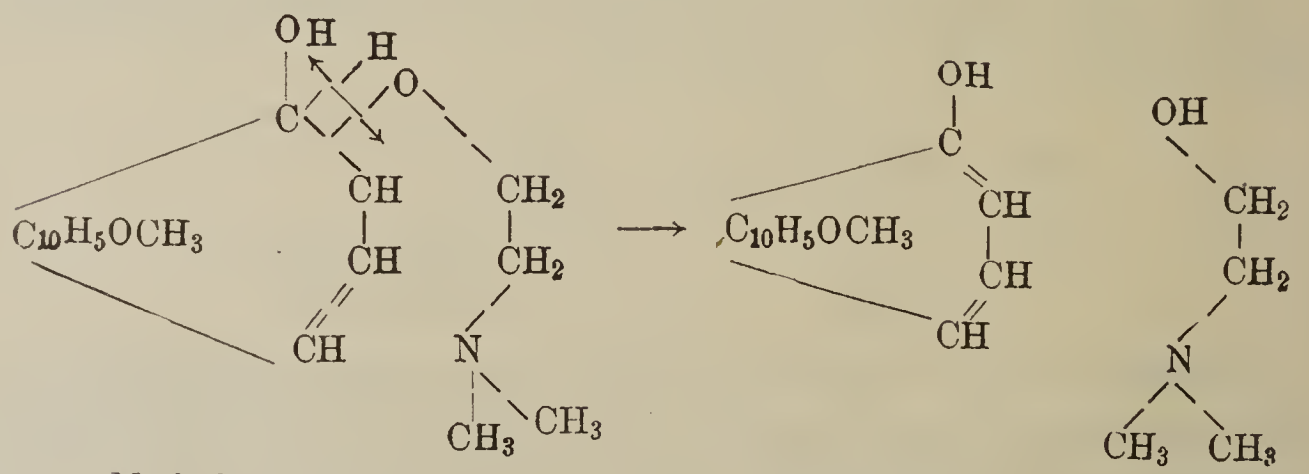


Tropine according to Willstaetter.[17]

The definite proof of this view can, however, only be furnished by a synthesis.

The highly interesting morphine group, morphine, codeine and thebaine, shows again an entirely different state of affairs. There is certainly no pyridine, respectively piperidine or chinoline ring in their molecule. The statements in this respect, which are found now and then in the literature, can be traced to a brief communication by R. Gerstl[18], in which he reports that Meyer and Wright had obtained small amounts of pyridine by heating morphine with caustic potash. The analytical proof for this is wanting. Later E. von Gerichten and Schroetter[19] report as the result of the zinc dust distillation of morphine, to have obtained, as principal products phenanthrene and a base which they suspect to be phenanthrene chinoline, as side products pyrrol, amine bases, ammonia, pyridine and chinoline. Pyrrol was identified in the vapors by means of the pine-wood-shaving reaction, pyridine, trimethylamine and chinoline by their odor on distilling with steam.

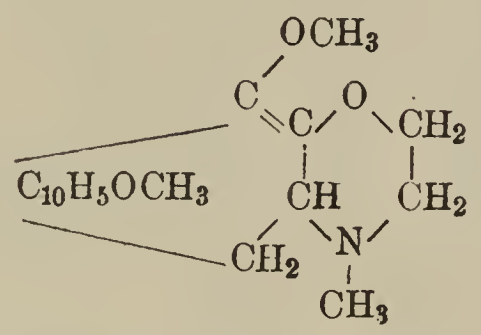
For the determination of the constitutional formula of morphine we are indebted to the work of Knorr. He resolved morphine, respectively codeine, through methylmorphimethine on the one hand into a hydramine, dimethyloxethylamine, and on the other hand into a dioxyphenanthrene by means of acetic anhydride in the sense of the following formula:[20]



Methylmorphimethine. Methoxy-oxophenanthrene. Dimethyl-ethanolamine.

[17] R. Willstaetter. Ber. 31, p. 2498.
[18] R. Gerstl of London. Ber. 6, p. 829.
[19] E. von Gerichten and Schroetter. Annal. 210, p. 396.
[20] L. Knorr, Zur Kenntniss des Morphins. Ber. 22, pp. 183 and 1113.

A neat splitting of morphine respectively codeine, methylmorphine, was thus affected. Freund[21] applied this process of splitting by means of acetic acid anhydride also to thebaine.

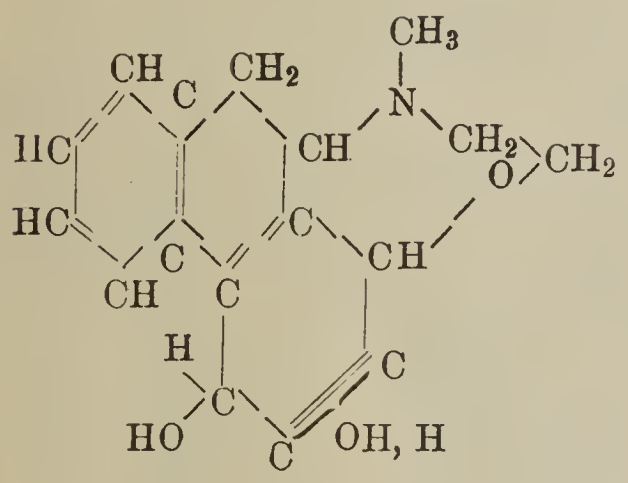


Thebaine according to Freund.

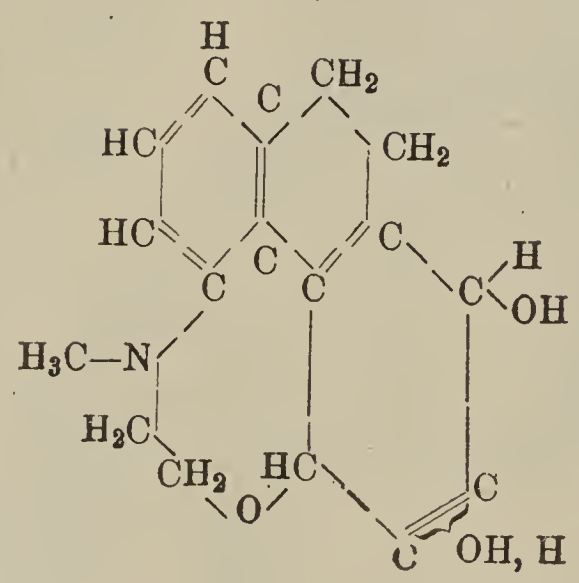
Freund also considered morpholine, the inner anhydride of dioxyethylamine, as the basis of thebaine, as Knorr had done for the most important alkaloids morphine and codeine.

The position of the oxygen atoms, with the exception of the ether-like oxygen in the morpholine ring, was not definitely given in the older morphine formula. Knorr[22] has lately given two formulas for morphine, based on his experimental work, and the position of the oxygen atoms can be considered as fairly well established.

I.

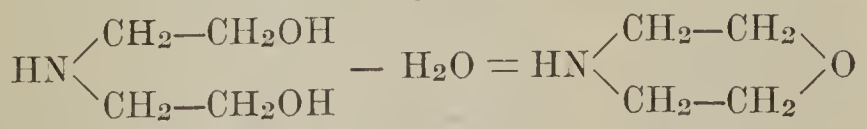


II.



E. von Gerichten has also distinguished himself in investigating and clearing up the constitution of morphine.

Knorr was able, shortly after giving his first morphine formula, to prepare morpholine, the existence of which he had predicted on the basis of his investigations on morphine from dioxethylamine by the abstraction of water with sulphuric acid.



Diethanolamine. Morpholine.

21 M. Freund, Untersuchungen über das Thebaïn. Ber. 30, p. 1357.
22 L. Knorr. Ber. 32, p. 742.

It has, however, been impossible to conduct the synthesis of morphine further. Let us hope that the activity of the chemists may be successful in clearing up more and more the field of the alkaloids and to prepare these natural products, which are so valuable as medicinal agents, synthetically.

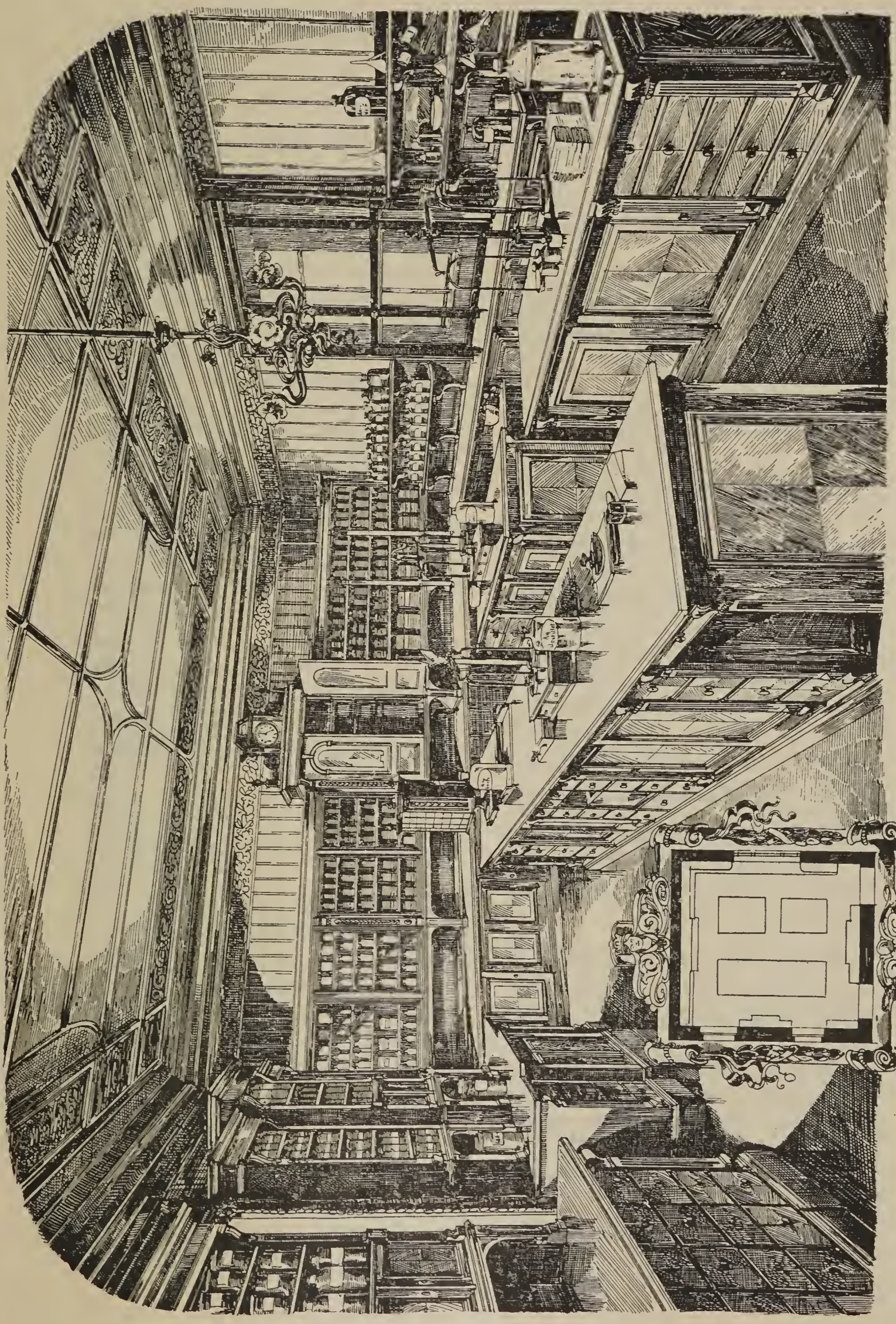
## Arrangement and Fitting of Drug Stores.*

Any careful observer who has visited hospital dispensaries must have been struck with the contrast between the dingy rooms assigned to the drug department by the authorities of medical colleges and hospitals on the one hand and the proverbial elegance of the equipment of the modern American drug store. Any old corner seems to be good enough for the dispenser and the medicaments he hands out to the patients upon the order of the resident physician, whereas the wide awake pharmacist does all in his power to make his place of business attractive to his customers. The accompanying cut of the dispensary of the municipal hospital at Leipzig makes a very favorable impression when compared with what we so often see in this country.

The above comparison, however, is not a fair one, for if we compare that part of the average American drug store which is back of the prescription counter with the dispensaries of medical colleges and hospitals, the comparison would not prove fully as favorable to the druggist. The space to the rear of the prescription counter is often not only dark and dingy, but at times disorderly and dirty as well. This certainly is not in harmony with the work there to be performed.

The accompanying cut should be valuable not only to hospital pharmacists but to those as well who desire to equip a dispensing room separate from the waiting room or store part of the pharmacy. The furniture of a dispensing laboratory of this kind may be very plain, yet neatnes, cleanliness and order of a room like the one here represented ought to inspire confidence in both physician and patient. We present this cut to our readers, not necessarily for reproduction of the plans in detail but for its suggestiveness to those who desire to arrange their pharmacies along modern professional lines.

* Continued from page 72.



**Equipment of Dispensary of Municipal Hospital in Leipzig.**

Designed by the "Hof-Moebelfabrik" of Franz Schneider in Leipzig.

# Popular German Names of Domestic Drugs and Medicines.*

By *Fr. Hoffmann.*

Ungenannter Politant — *Ungt. hydrarg. cin. dilut.*
Ungsensalbe—*Ungt. zinci.*
Unkrautpulver — *Pulv. magnes. c. rheo.*
Universalbalsam—*Empl. fuscum, Ol. terebinth. sulfur., Tinct. benzoes comp.*, auch *Elix. ad longam vitam.*
Universalkinderbalsam—*Aq. aromatica.*
Universallebensöl—*Elix. ad long. vitam., Mixt. oleoso balsamica.*
Universalpflaster—*Empl. fuscum.*
Universalpillen—*Pil. laxantes.*
Universalsalz—*Natr. bicarbonicum.*
Universalspiritus, gelber—*Mixt. ol. bals.*
Unreife Pomeranzen—*Fruct. aurant. immaturae.*
Unruhmehl—*Lycopodium.*
Unschlitt—*Sebum.*
Unser lieben Frauen Bettstroh—*Herb. serpylli.*
Unterwachssalbe—*Ungt. flavum.*
Unvertret } *Herb. polygoni avicularis.*
Unvertritt }
Uptochsöl—*Ol. viride coctum.*
Uralsches Pulver—*Pulv. liquir. comp.*
Urinsblumen—*Flor. lamii albi.*
Utram—*Herb. hederae.*

Vanillenöl—*Balsam. peruvianum.*
Veh-Driakel—*Electuar. theriaca.*
Veilchenkraut—*Herb. violae tricoloris.*
Veilchenöl (zum Heilen)—*Bals. peruv.*
Veilchensaft—*Sir. violarum.*
Veilchenwurzel—*Rhiz. iridis florent.*
Veitssalbe—*Ungt. hydrarg. albi.*
Venedische Drejackel—*Electuar. theriaca.*
Venetianischer Zug—*Cerat. res. pini.*
Venetianische Seife—*Castilseife.*
Venetischer Balsam—*Terebinth. veneta.*
Venushaar—*Herb. capilli veneris.*
Venusmilch—*Aq. rosae c. tinct. benz.*
Verdauungssalz—*Natr. bicarbonicum.*
Verdauungswein—*Vin. pepsini.*
Verdehl=Vertheilungs-.
Verdreet-Körn—*Sem. cardui mariae.*
Verfangkraut—*Herb. arnicae.*
Vergängnisspulver—*Pulv. temperans.*
Vermächtnisspflaster—*Empl. fuscum.*
Vermillon—*Cinnabaris.*
Vertheilungs-Kräuter—*Spec. resolvent.*
" Oel—*Ol. viride coctum.*
" Pflaster — *Empl. saponat., Empl. plumbi.*
" Salbe—*Ungt. rosmarini, Ungt flavum.*
Verwachs- und Verrufungskraut—*Herb. conyzae.*
Verzehrungspflaster—*Empl. saponatum.*
Verziehungsspiritus — *Spir. angel. comp.*
Vesicatorpflaster — *Empl. cantharidum.*
Viehmirakel—*Electuar. theriaca.*
Viehpulver—*Pulv. pro equis.*
Vielgut—*Herb. oreoselini.*
Violenöl—(*Ol. hyperici.*)
Violenpulver—*Pulv. rhiz. irid...*
Violensaft—*Sir. violarum.*
Violentinktur—*Tinct. lignorum.*
Violenwasser, gelbes—*Aq. chamomill. cum tinct. croci.*
Violenwurzel—*Rhiz. iridis florentin.*
Vipernöl—(*Ol. jecoris.*)
Visceralelixir—*Elix. aurantii comp.*

* Continued from p. 80.

Vitriol, blauer } *Cuprum sulfuricum.*
" Cyprischer }
" gemeiner } *Ferrum sulfuricum.*
" grüner }
" weisser—*Zincum sulfuricum.*
Vitriolgeist—*Acid. sulfuricum* (!)
Vitriolnaphtha—*Aether.*
Vitriolöl } *Acid. sulfuricum.* (!)
Vitriolsäure }
Vitriolspiritus }
Vitriolweinstein—*Kali sulfuricum.*
Vitriolvateressenztropfen—*Tinct. aromatica acida.*
Vivat, grau—*Ungt. hydrarg. cin. dil.*
" weiss—*Ungt. hydrarg. alb. dil.*
Vögerlsalbe—*Ungt. flavum.*
Vogelbeeren—*Fruct. sorbi.*
Vogelknöterich—*Herb. polygoni avicularis.*
Vogelleim—*Viscum avium.*
Vooslunge=Fuchslunge.
Vosssaft—*Mel rosal. c. borace.*
Vosssalv, witte—*Ungt. plumbi.*
Vrämte—*Herb. absynthii.*

Wachandelbeeren } *Fruct. juniperi.*
Wacholderbeeren }
Wachholdermus } *Succ. juniperi insp.*
Wachholdersaft }
Wachholdersalbe — *Ungt. rosmarin. comp.*
Wachholderthee—*Fruct. juniperi.*
Wachspflaster, gelbes—*Cerat. resinac pini.*
Wachssalbe—*Ungt. aquae ros. U. S. P*
Wähle—*Fruct. myrtilli.*
Wärmken } *Herb. absynthii.*
Wärmkraut }
Wahlwurzel } *Rad. consolidac.*
Wallwurzel }
Waldmeister—*Herb. asperulae.*
Waldrebe—*Herb. clematidis.*
Waldstroh—*Herb. galii veri.*
Waldwollöl—*Ol. pini sylvestris.*
Walkers Erde—*Talcum, Bolus alba.*
Wallfischöl—*Ol. jecoris.*
Wallfischuppe—*Os sepiae.*
Wallnussblätter—*Fol. juglandis.*
Wallnussschaalen—*Cort. nuc. juglandis.*
Wallnussöl—*Ol. nuc. juglandis* (*Ol. gossypii.*)
Wallrath—*Cetaceum.*
Wallrathpflaster—*Ungt. aquae ros. U. S. P.*
Wallrathpulver—*Cetaceum cum saccharo.*
Wallrathsalbe—*Ungt. aquae ros. U. S. P.*
Wanzenkraut—*Herb. ledi palustris.*
Wanzenöl—*Ol. terebint.*
Wanzensalbe—*Ungt. hydrarg. cin.*
Warmüde—*Herb. absynthii.*
Warzenkraut—*Herb. calendulae.*
Warzensalbe—*Ungt. aquae ros. U. S. P.*
Waschholz } *Cort. quillajae.*
Waschrinde }
Waschpulver—*Pulv. boracis.*
Waschwurzel—*Rad. saponariae.*
Wasserandorn—*Herb. lycopi.*
Wasserblei—*Plumbago.*
Wasserdorn—*Herb. marrubii.*
Wasserdost—*Herb. eupatoriae cannab.*
Wasserfenchel—*Fruct. phellandri.*
Wassergaucheil—*Herb. beccabungae.*
Wasserklee—*Herb. trifolii fibrini.*
Wasserkresse—*Herb. nasturtii aquat.*
Wasserminze—*Mentha aquatica.*
Wasserpfeffer—*Herb. hydropiperis.*
Wasserpflaster—*Empl. plumbi simpl.*
Wasserpolei—*Herb. pulegii.*
Wedel'sches Brustpflaster—*Pulv. liquirit. comp.*
Wegebreit } *Herb. plantaginis.*
Wegerich }
Wegdornbeeren—*Fruct. rhamni.*
Wegholder—*Junip. comm.*
Wegtritt—*Herb. polygoni avicularis.*
Wegwart—*Cichorium intybus.*
Wehentropfen—*Tinct. cinnammomi.*
Weichselstengel—*Stipit. cerasorum.*
Weidenrinde—*Cort. salicis.*
Weidenschwamm — *Agaricus suaveolens* (*Bolet. igniar.*)
Weihrauch—*Olibanum.*

Weinessig—*Acetum.*
Weingeist—*Alkohol.*
Weinraute—*Herb. rutae.*
Weinrosen—*Flor. malvae arbor.*
Weinsprit—*Alkohol.*
Weinstein—*Tartarus depurat.*
Weinsteinerde—*Kali carbonicum dep.*
" blätterige—*Kali aceticum.*
Weinsteingeist—*Liq. pyro-tartarici.*
Weinsteinöl—*Liq. kali carbonici.*
Weinsteinrahm—*Tartarus depuratus.*
Weinsteinsalz—*Kali carb. depuratum*
Weinsteinsäure—*Acid. tartaricum.*
Weintraubenpomade — *Cerat. labiale rubr.*
Weinwurzel—*Rad. paeoniae.*
Weiss Benzenöl—*Ol. rosmarini.*
Weissdornblüthe—*Flor. acaciae.*
Weiss flüchtig Oel—*Linim. ammoniae*
Weisser Andorn—*Herb. marrubii.*
Weisser Dorand—*Herb. ptarmicae.*
Weisser Enzian—*Rad. gentianae alb.*
Weisser Lebensbalsam (in Veterinär-Praxis)—*Ol. terebinth.*
Weisse Muttertropfen } *Spir.*
Weisse Kramptropfen } *aethereus.*
Weisser Ahrand—*Olibanum, Herb. marrubii.*
Weisser Augenbalsam—*Ungt. zinci.*
Weisser Augenstein—*Zincum sulfuricum.*
Weisser Diptam—*Rad. dictamni albi.*
Weisser Galizienstein—*Zinc. sulfuricum.*
Weisser Kaneel—*Cort. canellae albae.*
Weisser Kümmel—*Fruct. cumini.*
Weisser Ohrand — *Herb. marrubii, Olibanum.*
Weisser Präcipitat—*Ungt. hydrarg. albi.*
Weisser Vitriol—*Zinc. sulfuricum.*
Weisser Uran—*Olibanum.*
Weisse Wiesenwurzel—*Rad. graminis*
Weisskupferroth—*Zinc. sulfuricum.*
Weissnichts—*Zinc. oxydat. album.*
Weisspech—*Resina pini.*
Weisswurzel—*Rad. polygonati.*
Wergenkraut—*Herb. conyzae.*
Wermuth—*Herb. absynthii.*
Wermuthöl — *Ol. absynthii (aethereum* oder *coctum).*
Wermuthsalz—*Kali carbonic. depurat*
Wermuthstropfen—*Tinct. absynthii.*
Wewinne — *Flor. convolvuli (Flor. malvae vulg.)*
Wiederkehrwurzel } *Rad. victorialis*
Wiedertodwurzel } *long.*
Wiederton, goldener—*Herb. adianthi aurei.*
" weisser—*Herb. ptarmicae.*
Wiener Balsam—*Tinct. benzoes comp.*
" Tränkchen—*Infusum sennae comp. Ph. G.*
Wiesenknöterigwurzel—*Rad. bistortae.*
Wiesenkönigin—*Flor. spireae, Herb. ulmariae.*
Wiesenkümmel—*Fruct. carvi.*
Wildfleischstupp — *Alumen exsiccatum.*
Wilder Kümmel—*Sem. nigellae.*
Wille, letzter—*Kreosotum.*
Wildschweinzahnpulver — *Conchae praep.*
Windapfel—*Fruct. colocynthidis.*
Windenthee—(*Flor. malvae vulg.*)
Windfett—*Ungt. rosmar. comp.*
Windkümmel—*Sem. cumini.*
Windmohn—*Flor. rhoeados.*
Windpulver—*Pulv. liquirit. comp.*, für Kinder: *Pulv. magnes. c. rheo, Elaeosaccharum foeniculi.* (Veterinär) *Pulv. rad. valerian.*
Windsaft—*Sir. sennae, Sir. foeniculi.*
Windsalbe—*Ungt. rosmarin. comp.*
Windthee—*Rad. valerianae.*
Wind- und Ruhwasser—*Aq. focniculi.*
Windtropfen — *Tr. carminativa, Sir. menthae piperitae.*
Windwasser—*Aq. carminat., Aq. aromat.*
Winterblümel—*Flor. stoechados.*
Winzerfett—*Adeps.*
Wirbelöl—*Ol. spicae,* auch *Ol. hyoscyami.*
Wirk, Witten—*Olibanum.*

Wirk und Masch—*Mastix.*
Witten Klever—*Flor. trifolii albi.*
Witterkümen—*Herb. capilli veneris.*
Witterung—*Zibeth. artific.*
Wittervitriol—*Zinc. sulfur.*
Wochenmus—*Elect. e senna.*
Wörmd, Wörmk—*Herb. absynthii.*
Wörmkensolt—*Kali carbonic depur.*
Wörteln=Wurzeln.
Wohlgemuth—*Herb. origani vulgaris, Fol. menth. crisp.*
Wohlrath—*Cetaceum.*
Wohlverleih—*Arnica.*
Wolfsbeerenöl—*Ol. hyoscyami.*
Wolfsblumen—*Flor. arnicae.*
Wolfsblut, Wolfslunge } (*Sanguis hirci.*)
Wolfswurzel—*Rad. Carlinae.*
Wolfszähne—*Sem. paeoniae.*
Wolftrappkraut—*Herb. ballotae lanatae.*
Wolkensalbe, blaue—*Ungt. hydrarg. cin. dilut.*
Wollblume—*Flor. verbasci.*
Wollkraut—*Herb. verbasci.*
Wolrat—*Cetaceum.*
Wolwerlei—*Herb. arnicae.*
Wrämte—*Herb. absynthii.*
Wricksalv—*Ungt. flavum.*
Würfelsalpeter—*Natr. nitricum.*
Würznägelein—*Caryophylli.*
Wullblumen—*Flor. verbasci.*
Wulverling—*Herb. arnicae.*
Wundbalsam, Wunderbalsam } *Tinct. benz. comp., Bals. peruvian. Ungt, elemi.*
Wundbalsam, fester — *Ungt. elemi, Ungt. zinci., Bals. peruv.*
Wunderbaumkörner—*Sem. ricini.*
Wunderpfeffer—*Fruct. amomi.*
Wunderpflaster—*Empl. fuscum.*
Wundersalz, Glauber'sches — *Natr. sulfuric.*
Wundertropfen — *Tinct. chinioidini, Elix. ad longam vitam.*
Wunderöl—*Ol. ricini.*
Wundheil—*Herb. veronicae.*
Wundkraut, heidnisches—*Herb. virgae aureae.*
" deutsches—*Herb. cupatoriae*
Wundöl—*Ol. hyperici.* [*cannab.*
Wundsalbe—*Ungt. rosat., Ungt. basilic.*
Wundstein—*Cuprum aluminatum.*
Wundtropfen, schwarze—*Bals. peruvian.*
Wundwasser—*Aq. vulneraria.*
" Theden'sches—*Mixt. vulneraria acida.*
Wurmkraut—*Herb. tanaceti.*
Wurmgross—*Riz. graminis.*
Wurmdoggn, Wurmhäusel, Wurmkuchen, Wurmschnecken, Wurmzeltchen } *Pastilli santonini, Confectio cinae.*
Wurmmehl—*Lycopodium, Flor. cinae pulv.*
Wurmmoos—*Helminthochorton.*
Wurmpulver—*Flor. cinae pulv.*
Wurmsamen—*Flor. cinae.*
Wurstkraut — *Herb. majoranae et Herb. thymi aa.*
Wurtzpflaster—(*Empl. meliloti.*)

Ysop—*Herb. hyssopi.*

Zaccharіaspflaster—*Cerat. cetacei.*
Zachariastropfen—*Tinct. chinioidini.*
Zackensalbe — *Ungt. linariae, Ungt. plumbi, Ungt. flavum.*
Zäwersaat—*Flor. cinae.*
Zahnfrucht—*Sem. paeoniae.*
Zahnkraut—*Herb. betonicae.*
Zahnkörner, Zahnkorallen, Zahnperlen } *Sem. paeoniae.*
Zahnpflaster — *Empl. canth. perp., Empl. drouotti.*
Zahntropfen—*Tinct. myrrhae, -odontalgica, -spilanthis.*
Zahnwurzel—*Rhiz. irid. flor.*, auch *Rad. pyrethri.*
Zamarintensalbe—*Ungt. flavum.*
Zauberbalsam, Zauberöl } *Bals. peruvian., Ol. terebinth. sulf.*

Zaukenessig—*Acet. aromaticum.*
Zaunrübe—*Rad. bryoniae.*
Zederwurzel—*Rad. zedoariae.*
Zederöl—*Ol. terebint., Ol. ligni juni-*
Zedroöl—*Ol. citri.* [*peri.*
Zehrkraut—*Herb. betonicae.*
Zehrpflaster—*Empl. fuscum., Empl. plumbi comp., Empl. oxycroceum.*
Zehrtropfen, braune—*Tinct. amara.*
" weisse—*Spir. aethereus.*
Zehrwurz—*Rad. ari.*
Zeisigkraut, Zeisschenkraut } *Herb. sideritidis.*
Zeller's Pomade, Zellerich " } *Ungt. hydrarg. albi.*
Zertheilende Kräuter—*Spec. resolventes.*
Zertheilungssalbe—*Ungt. populi, Ungt flavum, Ungt. rosmarini.*
Zertheilungspflaster—*Empl. meliloti, Empl. saponatum.*
Zeussalbe—*Ungt. hydrarg. rubr.*
Zewersaat—*Flor. cinae.*
Zibbensaat—*Flor. cinae.*
Zibeben—*Passulae majores.*
Zibellentropfen—*Tinct. chinioidini.*
Ziegelöl, Ziegelsteinöl } *Ol. philosophorum, Petroleum.*
Ziegenbartpulver—*Lycopodium.*
Zigeunerkraut — *Herb. hyoscyami, Herb. marrubii aquat.*
Ziegeunerpulver—*Pulv. aromaticus.*
Zielkenkraut—*Herb. sideritidis.*
Zieratsalbe—*Ungt. plumbi, Ungt. cereum.*
Ziest, Zieskenkraut } *Herb. siteritidis.*
Zilksaft—*Mel rosat. c. boracc.*
Zilkstein—*Cupr. sulfuricum.*
Zimmermannsäpfel—*Gallac.*
Zimmt, weisser—*Canella alba.*
Zimmtblüthen—*Flor. cassiae.*
Zimmtessenz—*Tinct. cinnamomi.*
Zimmtnägelchen—*Flor. cassiae.*
Zimmttropfen—*Tinct. cinnamomi.*
Zinkvitriol—*Zinc. sulfuricum.*
Zinksalbe—*Ungt. zinci.*
Zinnasche—*Stannum oxydatum.*
Zinnessenz—*Tinct. einnamomi.*
Zinnkraut—*Herb. equiseti.*
Zinnsalz—*Stannum chloridum.*
Zinseminzthee—*Spec. St. Germain.*
Zipperles Samen, Ziptersamen } *Flor. einae.*
Zirkelpfeffer—*Piper longum.*
Zitrachsalbe, weisse—*Ungt. hydrarg. alb.*, auch *Ungt. zinci.*
Zitronenkraut, Zitronenmelisse } *Fol. melissae.*
Zitronensalbe—*Ungt. hydrarg. eitrinum.*
Zittwerwurzel—*Rad. zedoariae.*
Zittwersamen—*Flor. einae.*
" überzogener—*Confectio cinae.*
Zottenblume—*Menyanthes trifoliata.*
Zuckerholz—*Rad. liquiritiae.*
Zuckerkant—*Saechar. cristallisatum.*
Zuckerrosör—*Conserva rosarum.*
Zuckersäure—*Acid. oxalicum.* (!)
Zug, Zugpflaster, " brauner, gelber } *Empl. plumbi comp.*
" viereckiger, " venetianischer } *Cerat. resini pini.*
" weisser—*Empl. plumbi.*
Zugerichtetes Kupfer—*Ungt. zinci*, auch *Ungt. hydrarg. albi.*
Zugerichtetes Quecksilber—*Ungt. hydrarg. cin. dilut.*
Zugpflaster (gegen Zahnweh)—*Empl. canthar. perp. extens.*
Zugsalbe (auf Wunden)—*Ungt. basilie.*, auch *Empl. plumbi comp.*
Zurkensalbe—*Ungt. linariae.*
Zurnakthee—*Herb. saniculae.*
Zuthat—*Kali carbonicum.*
Zweckwurzel—*Rad. graminis.*
Zweiblatt—*Flor. convallariae.*
Zwergholunder—*Rad. sambuci ebuli.*
Zwetschenmus—*Succus prunor.*, auch *Elect. e senna.*
Zwetschensteinöl—*Ol. amygdal. dulc.*
Zwiebelöl—(*Spir. sinapis.*)
Zwiebelsäftchen—*Oxymel scillae.*

# MONTHLY REVIEW.

## Pharmaceutical Technique.

**New Method for Determining the Melting Point.**—Kuhara and Chickashigê use, in place of copillary tubes, two cover glasses, such as those used in microscopic work. The substance is distributed evenly between the plates by pressing, and they are then fastened by a clamp made of sheet platinum. The heating is done in a beaker which serves as an air bath, partially immersed in a second beaker containing sulphuric acid. The temperature at which the cover glasses become transparent is taken as the melting point. The method is said to be very accurate. [Chem. News, 80, p. 270.] *O. S.*

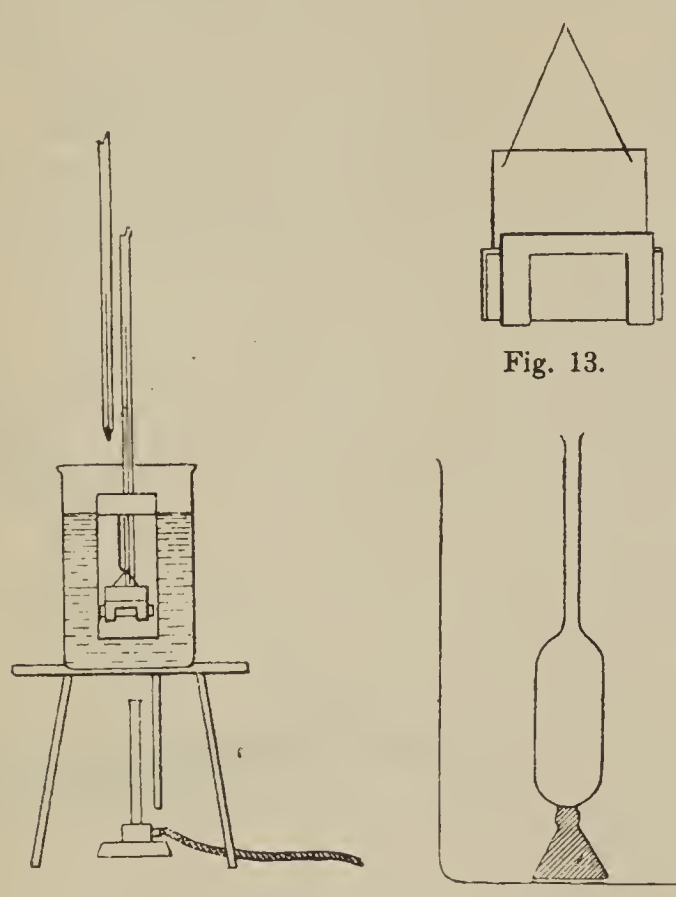
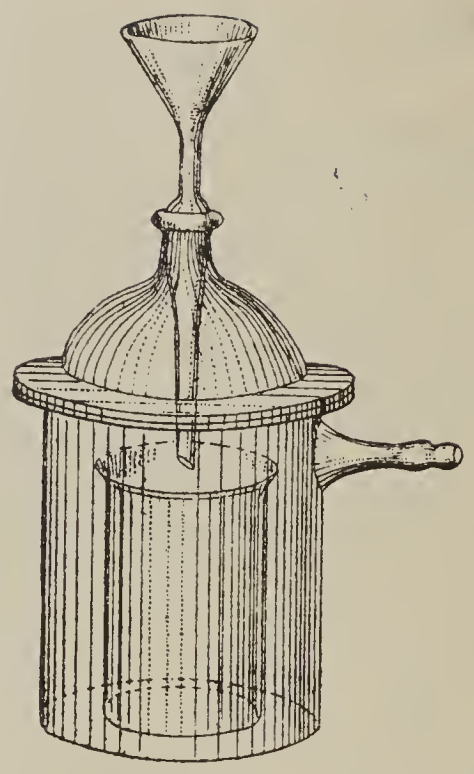


Fig. 13.

**New Pycnometer.**—Heinrich Göchel has devised a new pycnometer which is useful for determining the density of quite light liquids. It is provided with a very heavy glass addition at the bottom so that it cannot fall over when set into the constant water bath, even when it is filled with a very light liquid. It also has the advantage that the liquid in the bath touches the outer surface at almost every point.

[Z. f. angew. Ch., 1899, p. 1194.] *O. S.*

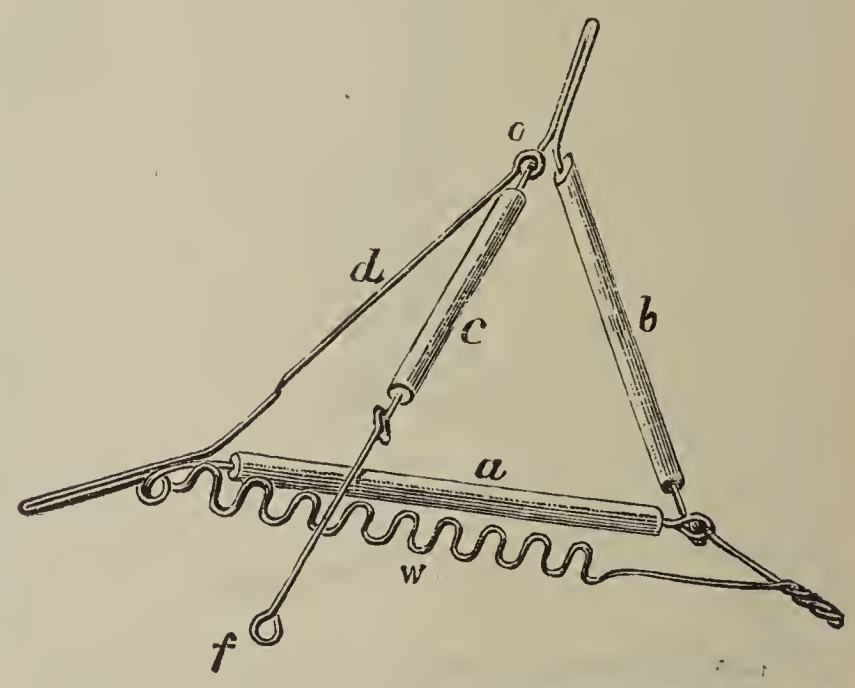
**Filtering Arrangement.**—It often happens that a liquid is to be rapidly filtered with a water pump, but the filtrate is to be collected in a vessel which cannot be used in connection with a pump, for intance, thinwalled fiasks, crystallizing dishes or beakers. In this case the apparatus devised by Witt and Herron in the accompanying figure will be found very useful.



It consists of a thick-walled, well-enameled cylindrical vessel, provided with a side exhaustion tube to which is connected the rubber tube of the pump. The rounded cover is ground on so as to be air-tight and supplied with a funnel, which is also ground in. When the apparatus is to be used it is connected while empty with the pump and the filter fitted into the funnel in the usual manner. The lid is then removed and the receiving vessel set in the cylinder and the filtration conducted as usual. The apparatus is especially of service where it is necessary to filter hot liquids which on cooling deposit crystals. Made by Max Kaehler & Martini, Berlin.

[Chem. Centralblatt, 1900, p. 2;
from Chem. Ind., 22, p. 509.] *O. S.*

**Adjustable Triangle.** — Martius recommends an adjustable triangle which is applicable to various sizes of crucibles. Its construction can be seen from the accompanying figure. The rods *a* and *b* are covered with pipe stem and form with the rod *d* a solid triangle. At *o* is an eye, in which the movable arm *c*, also covered with pipe stem, is fastened. This arm can be made to take any position from *b* to *d* by means of the wave-like wire *w* and the weight of the crucible.




[Chem. Ztg., 24, p. 15.] *O. S.*

## Practical Pharmacy.

**A Note on the Assay of Opium.** — W. R. Lamar recently noticed when assaying opium that, when the extract is treated with alcohol, prior to precipitation, a precipitate appeared and did not redissolve upon the addition of ether. He has demonstrated that this precipitate will contaminate the morphine in the final weighing and cause a considerable error.

To remove this precipitate it is recommended to add to the evaporated solution which has been brought to 20 gm. as directed by the U. S. P., 60 gm.

of alcohol. The precipitate is removed by filtration and the filtrate, with proper precautions, again evaporated to 20 gm. and then the morphine precipitated as usual.

This additional step in the process can easily be executed in an hour's time, and the author's figures show that in this way an extremely pure morphine is precipitated. [Am. Jour. Pharm., 72, p. 36.] *W. A. P.*

**Supplement to the Pharmacopœa Austriaca Ed. VII.**—The supplement to the last edition of the Austrian Pharmacopœia is now in press and is expected soon to be ready for distribution. The following summary briefly indicates the changes to be made in the text of the last edition of the Pharmacopœia. 12 galenicals are changed in their method of preparation; 25 new galenicals, 8 plants or parts of plants, and 16 chemicals and new remedies are introduced.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 66.] *W. O. R.*

**Incompatibility of Orthoform and Antipyrine.**—Powders containing orthoform, antipyrine and dermatol in equal quantities, upon standing several days, had formed hard lumps. Upon trial, a mixture of orthoform and antipyrine, in equal quantities, yielded a pasty mass which soon became solid, and then, if powdered, remained unchanged for some time. As orthoform is the methyl ether of amidobenzoic acid, the above trouble is analogous to that of antipyrine and phenols, especially para- and meta-oxybenzoic acids.

[Pharm. Post, 32, p. 740.] *W. O. R.*

**Adeps Benzoinatus,** a modification for the preparation of benzoated lard, is to extract gum benzoin with ether, and then mix the ethereal solution with castor oil and evaporate the ether. The castor oil solution ("liquid benzoin"), 15 gm., is mixed with the lard, 965 gm., and wax, 20 gm., if desired to have a more firm consistency.

[Pharm. Post, 32, p. 740.] *W. O. R.*

**Rubber Mortar Cap.**—R. Scholl of the Technical High School at Karlsruhe devised a rubber cap to cover mortars while hygroscopic, poisonous, strong or offensive smelling drugs are being powdered. The cap is a conical sheet of rubber, the center being perforated to admit the pestle, and the rubber very flexible so as to admit of moving the pestle. The bottom of the cone being somewhat smaller than a short distance from the bottom, so as to remain on the mortar while moving the pestle. The devise is very simple and very practical and ought to be very generally used.

[Chem. Zeitg., 24, p. 15.] *W. O. R.*

**Tincture of Nux Vomica.**—L. Emanuel recommends changing the present process of preparing the above tincture in the next revision of the U. S. P. He suggests the following: 200 gms. of powdered nux vomica are extracted by percolation with a menstruum of alcohol, 8 pts., and water, 1 p., until

900 cc. of percolate are obtained. 100 cc. of this percolate evaporated to dryness is assayed as to strychnine content, according to the U. S. P. process for extract of nux vomica, and then the remainder of the percolate standardized to contain 0.3 gm. of strychnine to 100 cc.

[Am. Dr. & Ph. Rec., 36, p. 3.] *W. O. R.*

**Syrup of Ferrous Iodide.**—L. Emanuel suggests a short process for the preparation of this syrup, which he claims is much shorter (requiring 30 minutes) than the present U. S. P. process and yields a more stable preparation. Iron filings, 25 gm., are placed in a 2 litre evaporating dish, 200 cc. of water poured over the iron and then stirred until the iron is thoroughly wet. 83 gm. of iodine is put into the dish while stirring rapidly during several minutes until the reaction is complete. Add 200 cc. of distilled water, heat to boiling and filter into a tared evaporating dish. Add 600 gm. of white sugar, heat again to boiling, and when the sugar is dissolved, make up to 1000 gm., strain while hot and preserve in well stoppered bottles.

Another change suggested by the above pharmacist is the dropping of pills from the U. S. P. because of practically the non-use of nearly all official pills. Pharmaceutically capsuled powders are far more satisfactory.

[Am. Dr. & Ph. Rec., 36, p. 3.] *W. O. R.*

## New Remedies.

**Adurol** is a new photographic developer. It is the chloro- or bromo-substitution product of hydroquinone. The new compound has been introduced simultaneously by Hauff & Co. (chloro) and Schering (bromo) and patents have been applied for in all countries. The chloro-product is a white crystalline powder and is practically identical in chemical (photographic) properties with the bromo substitution product.

[Amateur Photograph., 1899; through Drug Topics, 15, p. 3.] *W. O. R.*

**Antipyreticum compositum** is a trade name for a preparation brought into the market by J. D. Riedel of Berlin, in order to avoid the conflict with patent and trade mark rights of the "Antipyrine" people. Other names for the above mixture made from his Antipyreticum "Riedel" are "Migränepulver," "Phenazonum coffeino citricum," and "Dimethylphenylpyrazolon-coffeincitrat." [Pharm. Centrlbl., 40, p. 689.] *W. O. R.*

**Aquasanin,** a set of four tablets to be used in the sterilization of drinking water, which generate ozone and hydrogenperoxide instead of possessing direct germicidal properties. Tablets Nos. 1, 2 and 3 are added separately to the water, and when dissolved No. 4 is added, and after completion of the reaction the water is ready for use. Neutral alkali and manganese salts, which are in solution in the water, are not affected by this treatment. The composition of the tablet is not mentioned.

[Pharm. Post, 32, p. 662.] *W. O. R.*

**Arsycodile** is a name of a preparation which has been introduced in the German market in three forms, viz. spray, clyster, and pills. The first two contain 0.025 gm. of kakodylic acid, and the last the same amount of the sodium salt of kakodylic acid.

[Pharm. Centrlhl., 40, p. 750.] *W. O. R.*

**Arsycodyle,** the above cacodyl preparation, introduced during 1899, should be credited to M. Leprince of Paris, instead of to U. Uhlmann-Eyrand. The latter is the Swiss distributor of the remedy.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 37.] *W. O. R.*

**Calcium Santonate** is prepared by saturating a solution of santonic acid with lime water. The precipitate is a white tasteless powder insoluble in water. It is recommended to be used as a vermifuge, because of its slow absorption in the human body. [Apoth. Ztg., 15, p. 125.] *W. O. R.*

**Chielin** is a toilet preparation, put up in the form of a cream, and consists mainly of extract of tulip bulb and olive oil.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 37 ] *W. O. R.*

**Chloral Hydrate as an Antidote for Cocaine.**—Gioffredi after repeated clinical experiments recommends the use of chloral hydrate in large quantities (3—4 grams) as an antidote for case of cocaine poisoning. The reverse relation (cocaine for chloral hydrate), however, does not hold. Paraldehyde and sulphonal have the same property.

[Münch. med. Wchschr., 1899, p. 1630; through Apoth. Ztg., 14, p. 735.] *W. O. R.*

**Crurin** is a new title for the chinoline-bismuth-sulphocyanate, formula $(C_9H_7N.HSCn)_2.Bi(SCn)_2$. It is a granular, reddish-yellow powder with a somewhat acid odor, and melts at 70° C. It is insoluble in water, alcohol and ether. In common with all other bismuth compounds, when treated with a large amount of cold water, or heated with acids or alkalies, decomposition results. Under other conditions the above preparation is relatively stable and is used as antiseptic dressing for wounds.

[Therap. Monatsh., 1900; through Pharm. Zeitg., 45, p. 27.] *W. O. R.*

**Eka-Iodoform** is iodoform sterilized by the addition of 0.05 p. c. of polymerized formaldehyde. The preparation appears to possess the advantages, without the defects, of iodoform.

[Med. Bull., 22, p. 20.] *W. O. R.*

**Eugastrin** is supposed to be a mixture of the active constituents of condurango bark. A mixture of eugastrin and pilocarpin is termed Antihyperaemia and is administered in pill form as a remedy for pulmonary tuberculosis. [Deut. Med. Zeitg., 1899, p. 1122;

through Pharm. Centrlhl., 40, p. 783.] *W. O. R.*

**Gujasanol** is the hydrochlorate of diethyl glycocoll-guaiacol, ($CH_3O.C_6H_4.O.CO.CH_2.N(C_2H_5)_2.HCl$). It is a white crystalline powder, of a salty bitter taste and faint odor of guaiacol. Melting point 184°. The crystals are very soluble in water and are decomposed upon the addition of alkali carbonates, liberating the diethyl glycocoll-guaiacol which separates as an oily layer. The crystals when taken internally are nonpoisonous, noncorrosive, and are decomposed in the above manner. The physiological action is anaesthetic, antiseptic and deodorizing. The dose is 3 gm. per day, per os or injected subcutaneously. [Münch. Med. Wschr., 1900; through Pharm. Zeitg., 45, p. 27.] *W. O. R.*

**Ichtoform** is a new antiseptic preparation to be employed in dressing wounds. It is a combination of ichthyol and formaldehyde.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 38.] *W. O. R.*

**Kresamin** is obtained by mixing equal quantities of tricresol and ethylene-di-amine, and is a fluid, with a characteristic phenol odor. The penetration and disinfectant properties of the tricresol are increased by the addition of the ethylene-diamine. Kresamin is to be applied preferably in solution as a bath or wet dressing, but may also be used as a salve or plaster muslin.

[Therap. Monatsh., 1899; through Med. Bull. 22, p. 20.] *W. O. R.*

**Liquor Spleniferrini Peptonati** is prepared from spleniferrin and contains 0.6 p, c. of iron and, according to the manufacturers, all of the iron is absorbed when taken internally.. [Ph. Centrlhl., 40, p. 784.] *W. O. R.*

**Nural** is a new name for the preparation which has previously been sold under the name of Nutrol, a digestive and strengthening preparation.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 38.] *W. O. R.*

**Salicyl-carbonic acid ethyl ester** is a white crystalline powder, soluble in water and readily soluble in alcohol, ether, chloroform and benzol. When treated with ferric chloride in alcoholic solution, the characteristic violet color of salicylic acid does not appear. With alkalies, stable, readily soluble salts with characteristic therapeutic properties are formed.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 38.] *W. O. R.*

**Septicidin** is a serum preparation, prepared in a manner similar to other serums from the blood of highly immunized animals. It is quite stable, retaining its efficiency during six months, if kept in a fairly warm place, and is to be used as a remedy against hog-cholera, swine pest, etc., in the lower animals. [Pharm. Zeitg., 45, p. 27.] *W. O. R.*

**Sodium Saccharate,** is a new preparation to replace the sodium chloride solution which has been employed as a serum for injection upon loss of blood, with unsatisfactory results.

[Pharm. Centrlhl., 40, p. 724.] *W. O R.*

**Spleniferrin—Ferrum Splenatum**—is an iron and milk preparation and contains 30 p. c. of iron. It is easily retained by the stomach, and is a very good chalybeate tonic where the rapid formation of blood is desired.

[Med. Wchschr., 1899; through Ph. Centrlhl., 40, p. 784.] *W. O. R.*

**Sudoral** is a preparation recently introduced to prevent excessive perspiration, especially on the feet. It is a mixture of benzoic, boric and tartaric acids in a solution of alum. [Pharm. Zeitg., 45, p. 8.] *W. O. R.*

**Triacetylpyrogallol.** Upon heating pyrogallic acid with sodium acetate and acetic acid anhydride almost quantitative combination without the formation of by-products results. The compound is pure white in color, melts at 165° C. and possesses antiseptic properties.

[Ztschr. d. a. o. Apoth. Ver., 53, p. 859.] *W. O. R.*

**Cadmium, Lithium and Magnesium Sulphophenylates.**—The use of sulpho derivatives of phenols as medicinal agents was first reported in 1867 by Meuzner, who prepared zinc sulphophenylate and used it as a disinfectant. Quinine sulphophenylate was reported by Rademacher in 1871. Bart and Senhofer introduced the sulphophenolates of potassium, sodium, barium, lead and copper in 1873. Bismuth sulphophenolate was added in 1896 by Tarozzi, and silver sulphophenolate in 1897 by Zanardi. Baldaccini has recently made further additions to the above list in preparing cadmium, lithium and magnesium sulphophenolates.

The three salts are prepared by treating a solution of barium sulphophenolate with the sulphates of cadmium, lithium and magnesium respectively.

$$\left(C_6H_4\begin{matrix}SO_3\\OH\end{matrix}\right)_2Ba + CdSO_4 = \left(C_6H_4\begin{matrix}SO_3\\OH\end{matrix}\right)_2Cd + BaSO_4.$$

After removal of the barium sulphate by filtration, the solution is concentrated, the salts separate in a crystalline condition. Cadmium sulphophenolate is readily soluble in water and alcohol. Upon recrystallization, to remove traces of sulphate, larger crystals result. Commercial phenolsulphonic acid (aseptol), which contains both para- and meta-sulphophenol mixed with phenol and sulphuric acids, cannot be used in preparing the above compounds. The three compounds give the characteristic reactions for their respective constituents.

Cadmium sulphophenylate is recommended as a disinfectant in eye troubles.

Lithium sulphophenylate (small white prisms) because of its ready solubility is believed to be efficient in uric acid diathesia.

Magnesium sulphophenylate (large, white, hygroscopic crystals) should prove a very efficient intestinal disinfectant and purgative. These supposed therapeutic properties are yet to be verified.

[Bollet. Chim. Farm., 1899, p. 735; through Pharm. Zeitg., 45, p. 65.] *W. O. R.*

**Modern Blood Preparations.**—The modern blood preparations to be used in cases of deficient blood, poor assimilation etc. are numerous. The reason to be assigned for this large field is the supposition that the human system absorbs iron in combination with animal products more readily than the iron compounds of inorganic radicals. Chief among the substances serving as a basis for preparing other compounds is haemoglobin, the coloring matter of the red blood capsules. Haemoglobin taken internally splits up into albumen and haematin.

In order to determine the nature and purity of haemoglobin in the preparations now in the market, they were examined spectroscopically by W. Rosenstein in the pharmacological laboratory of Dr. Lewin of Berlin. The absorption lines were determined, as to their number and breadth, both before and after determining the reduction strength of the preparations with standardized yellow ammonium sulphide. From the data thus obtained the preparations were divided into three groups as follows:

Group 1 contains the haemoglobin unchanged, or only small quantities of metahaemoglobin.

Group 2 contains metahaemoglobin and haematin in combination in varying proportions.

Group 3 contains substances not normal to blood, or derivatives of blood constituents.

Group I.

**Haemoglobin Extract** (Pfeuffer's), a blood-red, syrupy mass containing about 33 p. c. of haemoglobin. Contains both oxy- and meta-haemoglobin.

**Haematogen** (Hommel's), prepared from defibrinated ox-blood, with the addition of Malaga wine and glycerin. It is a dark red liquid. When diluted, meta-haemoglobin lines are prominent. Upon further dilution, both oxy- and meta-haemoglobin lines appear, and after reduction an increased haemoglobin band.

**Fortuna-Haematogen** (Goldmann) behaves as a meta-haemoglobin containing preparation.

**Haemoglobin Albumate** (Theuer's) is a reddish-brown liquid containing Malaga wine, and "welche alle Bestandtheile des gesunden Blutes in natürlicher verdaulicher Form enthält." This preparation shows the lines of both the oxy- and meta-haemoglobin, and after reduction the haemoglobin band.

Group II.

**Physiological Haemoglobin Albumen** (Pfeuffer) is in the form of tablets, chocolate coated, and contains 1.0 p. c. of haemoglobin.

**Haemoglobin** (Nardi), "natural blood coloring matter," appears both in powder form and chocolate coated tablets.

**Dynamogen** (Sauer) is a liquid organic preparation containing iron and haemoglobin.

**Haemaglobin Tablets** (Radlauer) contain 0.5 p. c. of haemoglobin albumate in each tablet.

**Haemoglobin Lamellæ** (Merck) are reddish-brown, glistening plates, soluble in water.

**Ferrhaemin** (Hertel), "latest organic iron albuminate," is an organic iron preparation of fresh ox-blood, to which 20 p. c. of Spanish wine has been added as a preservative.

All of the above preparations show the meta-haemoglobin lines, and after reduction the haemoglobin band, increased, and especially the haemochromogen lines, which indicates the addition of haematin to the preparation.

Group III.

**Haemalbumen** (Dahmen) is a black powder, readily soluble in hot water, without the coagulation of albumen.

**Haemol** (Kobert) is a gray powder, prepared from defibrinated blood, by the addition of zinc dust. The powder is but slightly soluble in water.

**Haemogallol** (Kobert) is prepared by the action of pyrogallic acid upon stroma free, concentrated solution of blood. This also is but slightly soluble in water.

These preparations, with the exception of the latter, show the lines of haematin before reduction; and after reduction all show the lines of haemochromogen.

**Sanguinoform** (Wartenberg), a preparation which it is claimed contains haemoglobin, to which 2 p. c. of iron carbonate has been added, and

**Sanguinalpillen** (Krewel), claimed to contain 10 p. c. of crystallized haemoglobin, could not be verified in either case, with the statements of the manufacturers. The haemoglobin may be present in some changed form not detectable by the above method.

From the above summary it will be seen that none of the above preparations are prepared entirely from pure blood and that they contain the haemoglobin, in part at least, in other forms than that which the name indicates. The recommendations for the use of blood preparations are erroneous to begin with, in that their absorption from the alimentary tract is not certain. Injections of haemoglobin alone give definite and reliable results. Iron haemoglobin preparations are in no wise preferable to inorganic iron preparations. The indiscriminate sale of these blood preparations to persons, without a prescription from a physician, should be curtailed. The pharmacist does not verify the dose, and is therefore practically unacquainted with the preparation for individual treatment.

[Pharm. Centrlhl., 41, p. 48.] *W. O. R.*

# Literary.

## Books and Pamphlets Received.

J. B. Bailliere & Fils—Paris. Les Parfums Artificiels by Eugene Charabet. Avec 25 figures intercalees dans le texte. pp. VII, 296. 1900.

Verlag von R. Gärtner—Berlin. Chemisch-technisches Repertorium. Herausgegeben von Emil Jacobsen. 38. Jahrgang. Zweites Halbjahr, Erste Hälfte. Mit in den Text gedruckten Illustrationen. Pamphlet, pp. 146. 1899.

John Wiley & Sons—New York. Determination of Radicles in carbon compounds, by A. Meyer. Authorized translation by J. Bishop Tingle. First edition, first thousand. One vol. pp. IX, 133. 1900.

École Supérieure de Pharmacie—Paris. Thèses pour l'obtention du diplôme Supérieur de Pharmacien de 1re classe. Année 1899—1900: No. 1. Du role des tubes pyloriques dans la digestion chez les téléostéens. Par Théophil Bondouy. Pamphlet, pp. 44.

Théses pour l'obtention du diplôme de Docteur de l'Université. 1899—1900: No. 1. Étude historique. chimique et pharmacologique des principales préparations organotherapiques par Ernest Lépinois. Brochure, pp. 112.

No. 2. Recherches sur les levures du vignoble de Champagne. Contribution á la biologie des levures de vine. Par J. A. Cordier. Pamphlet pp. 65.

No. 3. Etude sur les Emetiques. Pamphlet, pp. 41. 1899—1900.

No. 4. Contribution a L'etude des Phosphures algaline-terreux. Pamphlet, pp. 64. 1899—1900.

No. 5. Contribution a L'etude du Proteus Vulgaris. Pamphlet, pp. 100. 1899—1900.

No. 6. Sur les combinaisons du bromure de bore, avec les composés halogénés du phosphore, de l'arsenic et de l'antimoine. Par Joseph Tarible. Pamphlet, pp. 51.

No. 7. Sur la Preparation et les propriétés de quelques phosphures métalliques à haute température. Par Georges Maronneau. Pamphlet, pp. 40.

Iowa Agr. College Exper. Station—Ames, Iowa. Some Injurious Scale Insects. Bulletin No. 43. pp. 32. 1899.

Author—Madison, Wis. 1) Cell division in Sperangia and Asci, by R. A. Harper. Pamphlet, pp. 59 with 3 plates. Reprinted from the Annals of Botany. Vol. 13, No. 52. 1899. 2) Nuclear Phenomena in certain stages in the development of the smuts, by R. A. Harper. Reprinted from the Transactions of the Wisconsin Academy of Sciences, Arts and Letters, Vol. 12. Pamphlet, pp. 24 with two plates. 1899.

Author—Cincinnati, O. Theodore Lund August Greve by John Uri Lloyd. Reprinted from the Eclectic Medical Journal. Pamphlet, pp. 8. 1900.

Author—Terre Haute, Ind. 1) Camphoric Acid. By William A. Noyes. Reprinted from the American Chemical Journal, Vol. 23. Pamphlet, pp. 8. 1900.—2) Report of the Committee on Coal Analysis. By William A. Noyes, W. F. Hillebrand and C. B. Dudley. Reprinted from the Journal of the American Chemical Society. Vol. 21. Pamphlet, pp. 16. 1899.

## Reviews.

A System of Instruction in Quantitative Chemical Analysis. By Dr. Arthur H. Elliott and Geo. A. Ferguson, Professors in the College of Pharmacy in the City of New York. 3d ed., revised and enlarged. Published by the Authors. N. Y.

It is strange that among the many books on Qualitative Analysis there are so few that can be commended in their entirety. The book before us has good features and a good teacher may make good use of it.

Among the good features may be mentioned as logical the placing of the separation of the groups of bases before the separation of the members of the groups. It is a good feature also to put in, for the information of practical workers, bits of the more usual commercial compounds of each metal. The analytical processes are given in detail and the explanations of these processes are sufficient as suggestions to the teacher and may well serve the student if he has good reference books from which to complete his knowledge.

An objection to the book is that it does not demand or seem to imply any desire for individual initiative on the part of the student or to regard him as more than a receptive vessel. One requirement made by the introduction is very unusual if not distinctly humorous. It is that the students, watching the teacher who stands on a raised platform, shall work synchronously with him, doing what he does at exactly the same time and in exactly the same manner. This is excellent for instruction in vocal music, but not of a character to lead to independence in analytical chemistry. This suggestion may, however, be neglected and the book serve a good purpose.

*H. W. Hillyer.*

Commercial Organic Analysis. A treatise on the properties, proximate analytical examination, and modes of assaying the various organic chemicals and products employed in the arts, manufactures, medicine, with concise methods for the detection and determination of their impurities, adulterations, and products of decomposition, by Alfred H. Allen. Third edition, illustrated, with revisions and addenda by the author and Dr. Henry Leffmann. Volume II—Part I: Fixed oils, fats, waxes, glycenol, nitroglycerin and nitroglycerin explosives. One vol., p. 387. P. Blakiston's Son & Co., Philadelphia, 1809. $3.50.

Allen's Commercial organic analysis is not in need of an introduction to analytical chemists. For no small number of years it has been the standard reference book of analytical laboratories in the English speaking countries. It was written by a chemist of large experience in analytical work and its general success unquestionably indicates that it very largely meets the wants of the busy analyst.

Organic chemistry has undergone exceedingly rapid development since the acceptance of structural ideas as a working hypothesis. Kekulé's conceptions are to-day proving as fruitful as ever. To the busy analyst it is of importance, therefore, to have the host of facts that are published annually digested in such a way that they may be of greatest use to him in moments of pressing need.

That the needs of the chemical analyst are, in part at least, differently understood is shown upon a comparison of the work before us and the treatise by Benedikt and Ulzer which was reviewed in this journal some time ago*. The treatment of the same subject by the

* Vol. 16, p. 77.

authors of the two works is in certain measure characteristic of the methods of the Germans on the one hand and of the English on the other. The German work is a special treatise; the English is part of a larger work written entirely by one man and now revised principally by another. The former reviews briefly but completely the entire scientific literature on the subject as a basis for analytical work; the latter presents but comparatively little of what is generally known as general scientific information. As a consequence, the latter is frequently more empirical than the former. A very striking illustration of these differences will be found upon comparison e. g. of the chapters on codliver oil in both works.

By some at least this will be regarded as a shortcoming in the English work. However, to most English and American analysts it will probably not appear as such, because advanced organic chemistry of a general nature has possibly never appealed to them. This new edition will, therefore, undoubtedly be in great demand and serve its purpose admirably as did the former editions. We should like to express the hope, however, that in a new revision, which may become necessary before many years, the value of more general scientific information as a basis for analytical methods be given careful consideration. Expert service, as it were, by specialists may not be without good results in the revision of a work of this kind. Paper and press work are good and the binding is common sense like and very serviceable for a laboratory reference work of this kind. *E. K.*

WERDEN UND VERGEHEN. 4. verb. Aufl., Heft 2. Geb. Borntträger, Berlin, 1899.

The picturesque title Werden und Vergehen is a little difficult to put into English but may perhaps be as well described by Evolution and Devolution or Growth and Decline as by any similar terms. It is a title appropriate to the work to which it applies—a treatise on the universe which not only goes back to the beginning but looks into the future to "the end of the world." The story of the earth is told in a popular and semi-scientific manner with much embellishment of literary style and figure. The straining after metaphor may be illustrated by a few of the chapter headings in the prospectus of the book: "In the realm of the Light-ray" (cosmogony), "From the earth's day book" (the constructional and destructional agencies operating to change the physiognomy of the

earth), "The first householders" (the mollusks), "The patriarchs of Nature's rulers" (the fishes), "Between water and land" (the amphibium), "From the earth to the heavens" (reptiles and birds), "The linking together of mother and child" (the mammals), "The paragraph of hate and contempt in natural law" (monkey and man), "An outlook into the future" (the end of the world). After reading these chapter headings we are not surprised that the author has in some instances found it necessary to explain by a parenthesis to what his high-sounding title really applies. The most difficult and perplexing problems not only of one but of several sciences are in these chapters fearlessly attacked and discussed to a conclusion with readers having no technical knowledge of the subject, for it is evident that the author is addressing the general reader.

It may well be questioned whether a work of this kind serves any useful purpose. Does it convey any adequate conception of the sciences with whose subject matter it so flippantly deals? If it be claimed that it disseminates valuable information the question may be asked whether it is necessary to throw such information out of proportion in order to give it an interest to the general reader? Can any one man present the great truths of a half dozen sciences so well as can the specialists of the several sciences individually?

To the reviewer it seems that the impressions afforded by a work like Werden und Vergehen are essentially false and misleading even if no statements absolutely false were contained in it. The straining after metaphor must inevitably be responsible for wrong impressions conveyed. Why should the chapter heading, "The patriarchs of the rulers of Nature" apply to the fishes more than to other orders of animals? Again we read, "The shapes of crystals and of gem stones." What correlation can there be between the shapes of crystals and of gems?

It would be easy to designate misstatements of fact in the body of the text but they are perhaps not more numerous than is generally the case with books of this class. It is a fact worth noting that "Wonders of Nature" books, in America at least, have to be floated by the subscription method—a method which introduces the work not on its own merits so much as on the wit and finesse of the book agent. That agent is well armed who can claim that all the knowledge of the universe has been compressed into his book.

*Wm. H. Hobbs.*

# SUPPLEMENT.

## Scientific and Professional Organizations.

**Congress on the History of Science.** The International Congress for Comparative History is to include a section on the history of the sciences, the programme of which promises something of interest to pharmacists and chemists. Among the subjects to be presented are the following: the history of the establishment of the unit of measures; a history of chemistry and alchemy up to Lavoisier; a study of the natural scientific teachings and observations of Aristotle and their position in modern times; the history of medicine during the middle ages; the history of medicine of non-european peoples, etc.

**IX. International Pharmaceutical Congress.**—The Committee on Organization of which Professor G. Planchon is President and M. C. Crinon Secretary, has issued several circulars relative to the organization of the congress to be held at Paris and its work. Following the general opening session, the sections will meet. In addition to the meetings of the sections there will be several general sessions devoted to the discussion of certain questions. There will also be a general closing session and scientific and other excursions. The four sections are: 1.) General pharmacy and pharmaceutical chemistry; 2.) Materia medica and pharmacognosy; 3.) Biological chemistry, bacteriology, hygiene; 4.) Professional interests. The meetings will be held in the Superior School of Pharmacy, Avenue de l'Observatorie, 4.

**Academy of Science of St. Louis.**—This society offers an interesting programme "An evening with the microscope" demonstrating the use of the microscope in the various branches of the natural sciences. The wide range of subjects covered is shown by the following list. The entire programme is under the direction of Professor H. M. Whelpley. Other representatives of the St. Louis College of Pharmacy are in charge of special subjects.

Anatomy:—Dr. R. J. Terry, Assistant Professor of Anatomy, Medical Department, Washington University.

Bacteriology:—Dr. Amand Ravold, Professor of Bacteriology and Hygiene, Medical Department, Washington University.

Blood examination:—Dr. Ludwig Bremer.

Botany:—Mr. H. F. Roberts, Instructor, The Shaw School of Botany.

Diseases of Forest Trees:—Dr. Hermann von Schrenk, Instructor, The Shaw School of Botany.

Drug Adulterations:—Mr. O. H. Elbrecht, Instructor in Microscopy, St. Louis College of Pharmacy.

Flour Inspection:—Mr. Victor Goetz, President Board of Flour Inspectors, Merchants' Exchange.

Insects Parasitic on Man:—Mr. C. F. Baker, Teacher of Biology, St. Louis High School.

Living Protoplasm:—Dr. Otto A. Wall, Jr., Instructor in Pharmacognosy, St. Louis College of Pharmacy.

Microphotography—Mr. Robert Benecke.

Mineralogy (Polarization of Light) —Dr. G. Hambach, Adjunct-Professor of Geology, Washington University.

Photographic Dry Plate Testing:— Mr. Robert Benecke. The G. Cramer Dry Plate Co.

Photomicrography: — Dr. Adolph Alt, Professor of Ophthalmology, Beaumont Hospital Medical College.

Physiology (Circulation of Blood): —Dr. Hartwell N. Lyon, Chief of Children's Clinic, Bethesda Hospital.

Seed Adulterations: — Mr. F. W. Maas, The Plant Seed Company.

Spice Adulterations:—Mr. William K. Ilhardt; Instructor in Microscopy, St. Louis College of Pharmacy.

Textile Fibers: — Mr. Peter J. Weber, Jr.

Trichina:—Dr. G. C. Crandall, Professor of General Medicine, Marion-Sims Medical College.

**Alumni Association, Chicago College of Pharmacy.** — The Alumni Association of the Chicago College of Pharmacy held the first of its series of meetings for the discussion of pharmacopeial revision in the parlors of the Palmer House on Thursday evening, February 8th.

The meeting was called to order at eight o'clock, President W. B. Day presiding. Notwithstanding the very stormy weather there were twenty-four members in attendance.

The first speaker was Professor C. S. N. Hallberg, delegate to the convention from the Chicago College of Pharmacy, and his subject, "General Observations on the Revision of the Pharmacopeia." The professor gave an outline of the manner in which the work of revision is accomplished, and as a member of the last Revision Committee, recalled the problems that had confronted the revisers in 1890. He then dwelt very briefly on the more important suggestions that had been made since the last revision and will probably come before the Convention and indicated some of the changes in the pharmacopeia that are likely to be made.

Following this address, Dr. J. A. Patten, delegate to the Convention from Rush Medical College, read a paper upon "The Revision of the Pharmacopeia from a Medical Point of View." The doctor presented suggestions collated from several sources and representing the opinions of quite a large number of Physicians concerning the popularizing of the pharmacopeia among medical practitioners. Chief among these suggestions were: Simplification and condensation of the text through the reduction in the number of classes of remedies and the omission of many preparations, for example, it was suggested that there be but one solid and one liquid preparation of each vegetable drug. The inclusion of a table of doses, either in the text or the appendix. Insertion of information concerning new remedies, possibly even to the extent of issuing an annual supplement bringing such information up to date. Standardization of galenicals, chemically and perhaps physiologically. The author disclaimed responsibility for some of these suggestions and stated that he would not at this time commit himself as favoring them but presented them as suggestions emanating from medical men.

In the discussion which followed it was pointed out that it was not so much the desire of the framers of the pharmacopeia to have physicians actually possess the work, as it is

to bring before them, by introduction into the pharmacopeia and from thence through the dispensatories and works on materia medica, such drugs and pharmaceuticals as are likely to prove of value in medical practice.

**The Club House.**

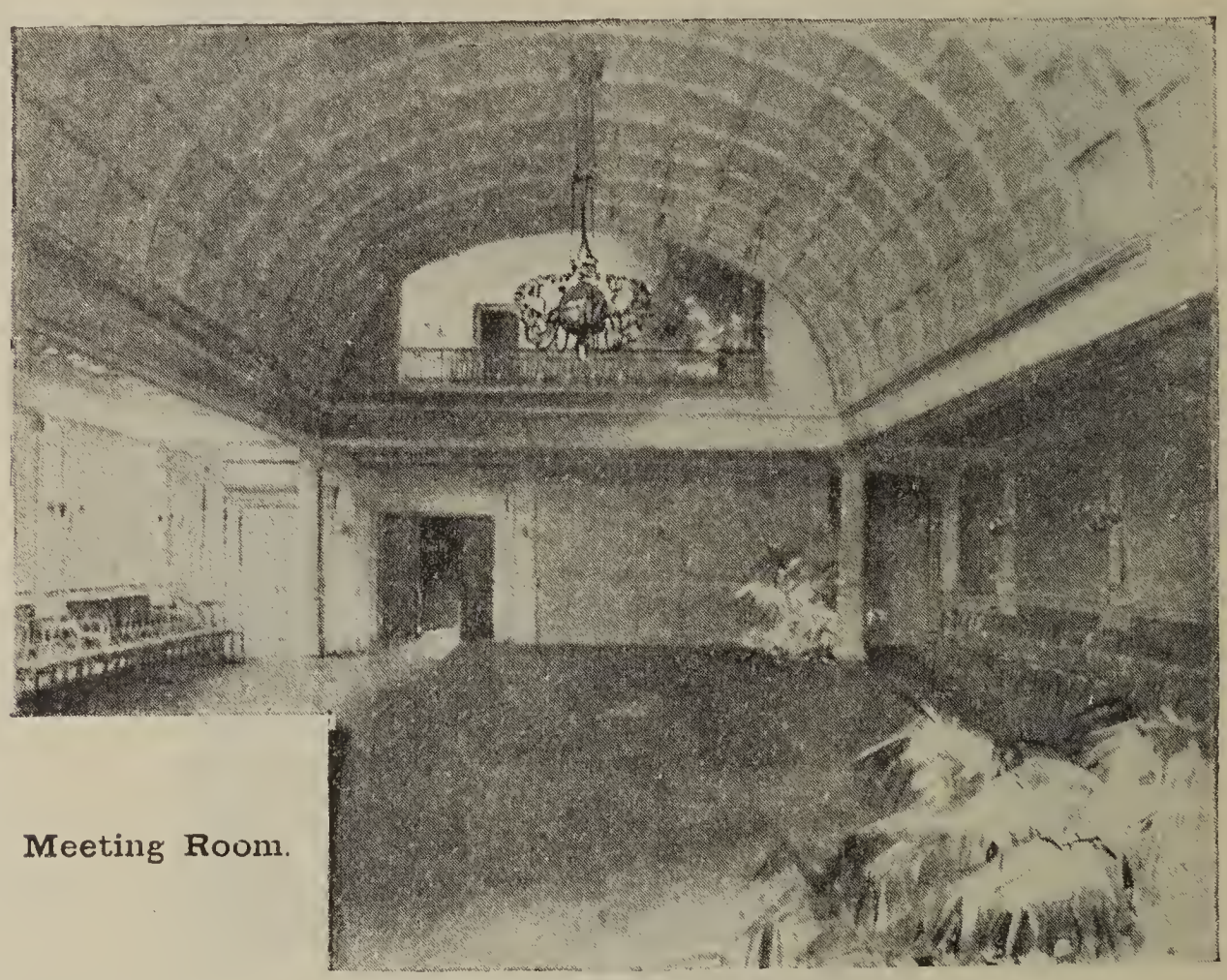
The papers referred to above, being of general character, necessarily introduced many important topics, time for discussion of which could not be allowed. Several of these topics are so important that later meetings will be devoted entirely to them. One of these, "Standardization," will be the subject for discussion at the next meeting which will be held at the same place on Wednesday evening, February 21st.

**New York Chemists' Club.** — The following circular issued by Prof. C. F. Chandler, President of the club, sufficiently states the objects of this organization now a year old. The accompanying cuts show the quarters acquired and in which the proposed library is to be housed. Comment on the text of the circular or the pleasant quarters seems un-

necessary. We wish the new club success in every respect.

"A number of chemists in the City of New York have organized a Chemists' Club. They have found and secured suitable rooms, including library rooms, a large hall for public meetings, reading-rooms, etc., and already one hundred and thirty-two resident members and fifty-four non-resident members have joined the Club.

It is believed that the Chemists' Club can be made of the greatest advantage for the entire chemical profession of the United States and Canada. It is proposed, if a sufficient number of members will join, to establish a complete chemical library, as far as practicable in duplicate, in order that there may always be at the headquarters of the Club copies of all chemical books that any chemist may wish to consult and, at the same time, there may be duplicates which may be sent all over the country, for a limited period, to members who may wish to consult them. It is proposed to place in charge of this library one or more men, well-educated chemists, familiar with chemical literature, able to read French and German, who will take charge of sending out books to members who write for them, and who will also be prepared to furnish information to members with regard to the best books on special subjects, together with references to journals and other matters which may be desirable. It is also proposed to provide copyists and typewriters for the purpose of making extracts and translations of journals and articles where they may be called for; in fact, it is the intention to make this



**Meeting Room.**

Club as useful as possible for the chemical profession. All that is proposed is entirely feasible if the profession will respond liberally and if every chemist in the country is willing to do his part. The dues have been made as small as possible—twenty-five dollars for resident members living within a radius of twenty-five miles of the City Hall, and five dollars a year for non-resident members living outside this distance. It is believed that there are five thousand chemists in the United States and Canada. If half of them would join the Chemists' Club it would be possible to do all that is proposed. Of course, if chemists hold off to see whether the other chemists are going to join, the enterprise will be a failure; but if every chemist comes up promptly and joins the Club its success will be assured. The Club has already passed the experimental stage and the dues of the present members meet the actual running expenses; but before we can accomplish all that we intend, it will be necessary to have a largely increased income, and funds for the purchase of books and journals.

This statement is issued as an appeal to the chemists of the country: first, to join the Chemists' Club at once; secondly, to contribute liberally, each according to his means, to the library fund; thirdly, to send to the Club any chemical books or journals which he can spare from his own library; fourthly, to interest every chemist of his acquaintance in the enterprise, and secure his coöperation.

**Library and Reading Room.**

The membership of this Club includes all kinds of chemists, theoret-

ical and practical — teachers and manufacturers. In fact, "any person who is interested in the science or practice of chemistry, is eligible to membership."

The officers of the Club would also be very glad to get the name and address of every chemist in the United States and Canada; a card catalogue is being prepared of the chemical profession, and they will be very grateful if every chemist will send his name and address to the Secretary, Marston T. Bogert, 108 West 55th Street, N. Y. City."

PROCEEDINGS RECEIVED:—

Georgia: Proceedings of the twenty-fourth annual meeting of the Georgia Pharmaceutical Association, held at Warm Springs, June 13 and 14, 1899, pp. 144.

Kentucky: Proceedings Kentucky Pharm. Assn., and Report of the Kentucky Board of Pharmacy with list of registered pharmacists, 1899. Brochure, pp. 200.

New Hampshire: Proceedings of the New Hampshire Pharm. Assn., twenty-sixth annual meeting, with report of the Commissioners of Pharmacy, 1899. Brochure, pp. 63.

North Carolina: Proceedings of the twentieth annual meeting of the North Carolina Pharmacentical Association, held at at Durham, May 18 and 19. 1899, p. 95.

North Dakota: Proceedings of the fourteenth annual meeting of the North Dakota State Pharmaceutical Association, held at Fargo, Aug. 8—10, 1899, pp. 110.

## In Memoriam.

**Karl Rammelsberg.** — The senior of the academic teachers of chemistry in Berlin, Professor Karl Rammelsberg, died December 27 at the age of 86 years. He was born April 1, 1813, in Berlin and, like many chemists of his period, began his career with pharmacy. He studied the natural sciences at Berlin during the years 1833—37 and became docent in 1840. Since then he has been continuously engaged as teacher. In August of last year he celebrated the twenty-fifth anniversary of his appointment as regular professor at the University of Berlin.

## Bibliography.

The "Pharmaceutische Zeitung" has published a series oi articles on Pharmacy and the natural sciences during the nineteenth century by G. Arends.

No. 1 of vol. 1 of the Drug Clerk's Journal was issued in January. This new journal is published in Chicago, is to be national in scope, and is to be "devoted to the drug trade in general and to the clerk and retailer in particular."

Those who are interested in the present movement to advance agricultural education in connection with the district schools will welcome the publication by the Agr. Dept. at Washington of "A German common school with a garden." This is a description, by C. B. Smith, of a German school where practical farming is taught in the school garden. It is a circular (No. 42, Office. Expt. St.) of seven pages with two figures.

According to No. 4 of Mycological Notes, four sets of photographs of fungi are now offered. The 1594 prints that have so far been distributed are said to be doing much good in advancing the study of our native agarics. Pharmacists who are at all botanically inclined should

avail themselves of obtaining these prints offered at cost by Mr. C. G. Lloyd of Cincinnati. They would not only aid him in the study of agarics, but also be available as attractive wall decorations for his store or office.

CATALOGUES RECEIVED:—

J.-Baillière et Fils. Le mois médico-chirurgical. Fevrier 1900.

F. A. Brockhaus—Leipzig. Monthly list of new books. January 1900.

Gustav Fock — Leipzig. Answahl von Zeitschriften und wichtigeren Werken aus den Gebieten der Chemie, Pharmacie, Technologie etc. Lager-Verzeichniss No. 167. 1900.

Lemcke & Buechner — New York. Monthly bulletin of world literature. November and December 1899.

The Macmillan Company — New York. Book Reviews. February 1900.

U. S. Dept. of Agr. — Washington. Monthly list of publications. January 1900.

## Miscellaneous.

**The Metric System.** — The following abstract from the *C. & D.* of a paper recently read before the Society of Chemical Industry may do some good where a purely scientific disenssion would prove futile. Incidentally it may serve to enlighten those who object to the metric system because it is unamerican.

"Dr. Squire said some time ago a number of gentlemen interested in the metric system of weights and measures interviewed the President of the Board of Trade, and after putting their arguments forward, Mr. Ritchie remarked that there must be something good about the present system or two such practical nations as the British and American would not have adopted it. The present system, Dr. Squire said, never was adopted—it "grew up"; and he then sketched the origin of the system as far as could be traced. Many of the units were adopted from measurements of parts of the body. The distance from the elbow to the end of the second finger gave the cubit, probably the most ancient measure of all. The cubit was used in the construction of the Great Pyramid, and averaged 20-63 inches. The lecturer then referred to the works of Mr. John Taylor ("Battle of the Standards") and Professor Piazzi Smyth ("Life and Work at the Great Pyramid"), who maintained that our measures have been derived from those of the Great Pyramid; charcterising these writings as an example of how scientific men with religious monomania are led away. Other proportions of the human body have given us the foot, the span (thumb and little finger extended to the utmost), the hand (still used for measuring horses), and the fathom (the distance between the tips of the fingers and the extended arm). The ounce applied to weights originally meant, as the word denotes, a twelfth part of anything, the troy ounce being thus the only true ouce we have.

Natural object furnished a variety of units: the barleycorn, of which three "round and dry," according to a statute of Edward II., made 1 inch; the yard and the pole, which the lecturer thought originated from tfie first two sticks handy at the time, as witness the fact of the pole being 5½ yards. The mile originated from the Roman one of 1000 paces. This was the true mile; bnt now the mile seemed to mean any large customary measure of length. The Scotch mile was 1,976 yards, the

Irish mile 2,240 yards, and the Welsh mile 4 English miles. With one of the flashes of dry humour with which the lecture was illuminated Dr. Squire said he thougt the Roman mile was still used by cabmen. The pound, or *pondus*, did not originally signify any particular weight, and seems to have varied from 12 to 28 oz. As to the stone, Dr. Squire said he believed that in some parts of Devonshire butter was still weighed at farmhouses by the "pound stone." Our ancestors seem to have picked stones from the brook, and adopted them as standards; one weighing 8 lbs. was used for meat, a larger one (16 lbs.) for tea, and a good sized one, weighing 32 lbs., for hemp. The act of 1824, in which Imperial weights and measures were laid down, and the Commission which led up to it, where then mentioned. The pendulum method of restoring the standard yard mentioned in the Act, and pound deduced from the weight of a cubic inch of water at 62° F., were superseded after the researches of Captain Kates, which resulted in the adoption of standards of which copies were sent to various centres and could be used for making correct measures and weights. Dr. Squire said he did not know the origin of "avoirdupois," unless it was to distinguish between weights which have weights and weights which have none, and proceeded to enlarge on the absurdity of having two differing ounces and pounds. The only bright spot in our Imperial measures was the gallon of water weighing 10 lbs. Referring to the coincidences of the Imperial and metric measures, which Sir Frederick Bramwell pointed out some sixteen years ago in that room, Dr. Squire said coincidences were no argument, and, if they were, the metric system, being made up of coincidences, had the best of it.

In regard to Sir F. Bramwell's objection to the metric system, urged in a letter to the Times last March, Dr. Squire said it really did not matter that the quadrant measure of the earth had since been found to be inaccurate, as the main thing was to have fixed on a unit; the metric method of doing it was surely as good as taking a brass weight (as the 1824 Act did), which lost weight if it were cleaned and gained if it were not. The kilogramme, it has been urged, is inconveniently large. This, the lecturer said, may be so for confectionery and tobacco, but surely it was not for coal; they could not have one denomination convenient for every purpose. Sir F. Bramwell said he had often noticed that at the French railway-stations the booking-clerks had to figure out the price of the tickets on paper before they could tell the amount. This, Dr. Squire said, was due to the employment of elderly women as booking-clerks, who were not, as a rule, lightning calculators. It has also been urged that the decimal point is apt to get misplaced, but that was not the lecturer's experience. The fact that the figure 10 was not readily divisible was another objection urged against the metric system; but they should bear in mind that the system was really a milliary system, and that 1,000 was disible by 2, 4, 5, and 8. In conclusion, Dr. Squire pointed out that the kilowat used by the Board of Trade as a standard for the electric current and the postal parcel limit of 11 lbs. (5 kilogrammes) were already in use and caused no inconvenience. The use of metric money was Utopian, as the rate of exchange between countries was always varying, but it was not so with weights and measures."

# Pharmaceutical Review.

VOLUME 18. APRIL, 1900. NUMBER 4.

## Editorial.

On the first Wednesday of next month there will assemble at Washington the Convention for the Eighth Decennial Revision of the Pharmacopœia of the United States of America. If the delegates, which will represent the various pharmaceutical and medical societies and corporations, are at all possessed of the spirit of the times this congress at the change of the centuries will be a memorable one indeed. It would be idle, however, to attempt to prophesy what the possible outcome of the deliberations will be. It may be more profitable at the present moment to look backward and briefly to consider the work of the last Revision Committee.

One of the most important duties of the Convention will be the selection of a Committee of Revision and Publication. The present committee consists of Dr. Charles Rice, who has so ably served as Chairman of two revision committees, and the following associates: Pharmacy is represented by C. L. Diehl, C. N. S. Hallberg, C. Mohr, O. Oldberg, F. B. Power, J. P. Remington, and L. E. Sayre; medicine by R. Bartholow, F. A. Castle, N. S. Davis, R. T. Edes, J. M. Flint, J. Godfrey, W. M. Mew, and H. C. Wood; pharmacy and medicine jointly by R. G. Eccles, W. G. Gregory, H. H. Rusby, and O. A. Wall. Since its organization ten years ago, six members have died, viz. P. W. Bedford, C. O. Curtman, J. M. Maisch, G. F. H. Markoe, A. B. Taylor, and T. F. Wood.

The work of this Committee of Revision, as far as the published product, the U. S. Pharmacopœia, is concerned, has spoken for itself

during the past seven years. However, the work of this Committee did not cease with the publication of the Pharmacopœia in 1893. Under the able direction of its Chairman, committees of research were organized that have helped to pave the way for the committee to be elected next month. The work of these committees should be valuable not alone because of the actual results that were obtained. Europeans have not only made favorable comments on the last Pharmacopœia, but have praised the American way of constantly working at the revision of our national standard more than any thing else. It should be a cause for gratification to American pharmacists that in this respect also they have been much more active than their medical confrères.

Besides sharing in the responsibility of deciding the general policy of our national standard, the medical fraternity is not as keenly interested in the make up of the Pharmacopœia as are the pharmacists. Whatever may be the individual tastes and opinions of those who go to Washington next month as the delegates of our calling, they should remember that what the American pharmacist wants is not academic discussion, but practical relief from a position that has become almost intolerable.

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Apropos of the revision of the Pharmacopœia and its scope which has recently been discussed to a considerable extent, it may be of interest to call attention to an action of the Food and Drug Congress which met at Washington last month. From an account on p. 193 it will be seen that little attention was given to the subject of drugs, and that what little there was, was largely of a negative character. To the careful observer one thing must be apparent and that is the potent fact that the scope of the U. S. Pharmacopœia is altogether too limited for useful legislation in this direction.

By way of illustration the Wisconsin law may serve as well as any other. Section 4601 of the statutes of 1898 defines what constitutes an adulteration of a drug. It reads as follows: "First, if, when sold under or by a name recognized in the United States Pharmacopœia, it differs from the standard of strength, quality or purity laid down in the latest current edition thereof; second, if when sold under or by a name not recognized in said Pharmacopœia, but which is found in the Pharmacopœia of some other country, the National Formulary or other standard work on materia medica, it differs

materially from the standard of strength, quality or purity laid down in the latest current edition of such work; third, if its strength, quality or purity falls below the professed standard under which it is sold."

If e. g. a druggist sells an article which is not officinal in the U. S. P., but happens to be recognized by the French or Russian pharmacopœias, of which it is absurd to expect the pharmaceutical practitioner to take cognisance, and if such article be found of different quality from that adopted by these foreign works given official recognition by our laws, the druggist may be held legally responsible. It will be argued that such a case is not likely to occur, and we do not care to press the argument. It may not be amiss, however, to call attention to the recent St. Louis trouble and to many other instances where the druggists have had to contend with what they regarded as legal persecution. The fact, however, that our Pharmacopœia is so limited in scope that it becomes necessary to resort to the National Formulary or "other work on materia medica" becomes only too evident. The danger of ambiguity if we should ever be successful in securing the passage of a national drug law must be apparent to all.

The Pure Food and Drug Congress recommended that the National Formulary be stricken from the Brosius' Bill. It is not germane to the question what motives actuated this move. Suffice it to state that the argument made was that the National Formulary was not official. This shrewd manipulation again reminds us of the limitations of our official standard.

When the question of the stamp tax arose during the Spanish war, it was suggested by a representative pharmacist that the preparations of the U. S. Pharmacopœia and of the National Formulary be exempt. This was quashed at the time by some of the "friends of the druggist." It is not necessary to expand on the benefits the pharmacist might have derived from such legislation and on the impetus it would have given to what we choose to call legitimate pharmacy. Such legislation would, however, have also impressed us with the limitations of the present and past editions of the Pharmacopœia. It would be foolish to expect everything of the Pharmacopœia, but it certainly will not suffer in usefulness by a liberal extension.

# On the Nature of Ointments.

By *Louis Kahlenberg.*

Some months ago I had one of my pupils, Mr. L. F. Ruschhaupt, perform a series of experiments on ointments, and the results that were obtained appear to me to be of sufficient importance to warrant their publication.

The ointments considered were those of zinc oxide, red mercuric oxide, and lead carbonate. Besides the bases for these salves prescribed in the U. S. P. of 1890, vaseline and also lanolin were used. The object of this investigation was to ascertain whether the ointments in question are merely mechanical mixtures of the ingredients used or whether chemical action actually takes place between the base of the salve and the oxide or salt employed. The general method of procedure was to prepare the ointment, and to extract it with a solvent that would dissolve the base and also the compound formed by it with the oxide or carbonate, thus leaving the uncombined portion of the latter behind as a residue. The solution thus obtained was then subjected to analysis.

The lard used was rendered in this laboratory from pure leaf lard and the product was kept in a cool place. The vaseline was obtained from the Chesebrough Manufacturing Company, New York, and the lanolin from the lanolin works of Benno Jaffé and Darmstädter, Martinikenfelde near Berlin. The zinc oxide, red mercuric oxide and lead carbonate were manufactured by Th. Schuchardt in Görlitz.

It was found that zinc oleate prepared from zinc oxide and free oleic acid is quite soluble in chloroform, carbon disulphide and benzene; but that it dissolves only slightly in ether, alcohol and petroleum ether. As olein is the main constituent of lard, chloroform was accordingly used as the solvent in extracting the zinc oxide ointment containing lard as a base.

Finely pulverized zinc oxide was thoroughly rubbed up with lard in the ratio of 20 parts of the former to 80 of the latter and also with vaseline and with lanolin in the same proportions. The lard ointment of zinc oxide was extracted with chloroform and filtered. The filtrate containing the lard and oleate of zinc was evaporated and finally carefully burned and strongly ignited in a porcelain crucible of suitable size. The zinc oxide could be recognized by its

yellow color when hot, changing to white upon cooling. Thus 8.557 grams of the ointment yielded 0.0003 gram ZnO and another sample of 9.907 grams yielded 0.0008 gram ZnO. From this it is clear that the amount of saponification of the lard by the zinc oxide is insignificant. Another sample of the lard ointment of zinc oxide was heated to 150° C. for ten minutes, the mixture being stirred constantly till cool. It was then tested as described with the result that 6.228 grams of ointment yielded 0.0015 gram ZnO. In the case of another ointment 7.007 grams yielded 0.0025 gram ZnO. In all cases the oxide was weighed with the dish, the latter being weighed alone immediately afterward. The amount of saponification then in the case of the ointment prepared hot is greater than in that prepared at room temperature, as one would naturally expect, nevertheless the action is only very slight at best.

Extraction of the vaseline zinc oxide ointment (prepared both at room temperature and at 150° C.) yielded no zinc in the extract, as was to have been expected from the chemical nature of vaseline. The vaseline zinc oxide ointment is then merely a mechanical mixture.

The lanolin zinc oxide ointment was extracted with carbon disulphide. The sample prepared at room temperature gave the following result: 4.625 grams ointment yielded 0.002 gram ZnO; while the ointment heated to 150° C. for ten minutes gave 0.009 gram ZnO in 4.874 grams of salve. The saponification then is greater than in the case of lard, and as before, it is much greater at the higher temperature.

A zinc oxide ointment consisting of zinc oxide, castor oil and simple ointment (lard and wax in the proportion of 4 to 1) in the proportions of 20 to 5 to 75 by weight was prepared at ordinary temperature and also at 150° C. It was extracted with benzene, as this seemed to be the best solvent for cerotates. The extract was evaporated, heated and ignited as before. The sample prepared at room temperature yielded 0.001 gram of ZnO from 8.045 grams ointment; while that heated to 150° gave 0.003 gram ZnO from 7.953 grams salve. These results are very likely too low, as benzene hardly extracts the ointment completely.

Ointment of red oxide of mercury and lard in the proportions of 1 to 9 was prepared at room temperature and also at 150° to 160° C. Six to seven grams of this ointment were extracted with carbon disulphide and filtered. The filtrate was shaken up with water and

then saturated with hydrogen sulphide gas. Only traces of mercuric sulphide were found, however. The same salve prepared hot or cold with vaseline as the base gave not the slightest trace of mercuric sulphide when treated as just described. This is again what one would expect, vaseline being a mixture of hydrocarbons.

Ointment of red oxide of mercury (U. S. P. 1890) was prepared by rubbing the oxide with castor oil and then with simple ointment (lard and wax in the proportion 4 to 1) in the proportions 10 to 5 to 85. The salve prepared at room temperature was extracted with benzene, the filtrate was then shaken up with water and saturated with hydrogen sulphide gas, but only a very slight darkening of the fluid was observed. But when the ointment prepared at 150° C. was thus treated, quite an intense black coloration appeared.

Mercuric oxide salve of red oxide and lanolin (1 to 9) when extracted with carbon disulphide gave an intense black coloration on treating the filtrate with water and then saturating with hydrogen sulphide gas. This coloration was so deep in case of the salve prepared at room temperature as well as in case of that heated to 150° C. that no real difference could be observed. Attempts to filter off the sulphide formed failed, because even the very best of filters would not retain the precipitate.

Ointment of lead carbonate (U. S. P. 1890) was prepared at room temperature and also at 150° C. The samples were extracted with turpentine, well known as a solvent for lead plaster. The extracts were found to contain only mere traces of lead. It was of course hardly to be expected that lead carbonate would saponify lard under the conditions obtaining.

From the above it appears that the ointment of lead carbonate U. S. P. is merely a mechanical mixture of the carbonate and lard. The ointments of zinc oxide and of mercuric oxide with vaseline as a base are also merely mechanical mixtures. The ointment of zinc oxide with lard as a base contains but a very insignificant amount of zinc oleate when prepared at room temperature; when heated to 150° C. the amount of zinc oleate is much increased relatively though on the whole it is still slight. When simple ointment U. S. P. is used as the base of zinc oxide ointment more zinc salts are formed (especially at higher temperatures), probably because of the free cerotic acid contained in the wax forming an ingredient of simple ointment. Lanolin when used as a base is much more saponified by zinc oxide than is

lard. What has been stated of the ointment of oxide of zinc holds also substantially for the ointment of red oxide of mercury.

From the standpoint of therapeutics the action of the secretions of the affected parts to which the ointments are applied comes into consideration. It would seem, however, that those ointments in which a certain degree of saponification of the base takes place would be more effective than those that are mere mechanical mixtures. If this be the case, the ointments made up with lard plus wax as the base are far superior to those in which vaseline is used; but lanolin is better as a base than either of these. Again, an ointment prepared at a high temperature is better than one prepared at room temperature. It would be of interest if some bacteriologist would undertake to investigate the relative antiseptic properties of these ointments. The desirability of having them properly tested by a practicing physician is of course still greater. Such tests would show whether the above surmise as to the efficiency of the ointments is well founded.

Chemical Laboratory, University of Wisconsin.
Madison, March 19, 1900.

# Euphorbia Lathyris L. and Euphorbia Helioscopia L.

By *R. H. Denniston.*

Among the excellent articles in the eleventh annual report of the Missouri Botanical Garden, just published, is a monograph on "Revision of the American Species of Euphorbia of the Section Tithymalus" by J. B. S. Norton.

Inasmuch as the report does not reach pharmaceutical readers to any great extent, two of the species used in medicine are here described and figured.[1]

The section *Tithymalus* comprises[2] the greater part of the known species of *Euphorbia*, containing nearly 400 of the 700 or more described. Comparatively few occur in America where the sections *Anysophyllum* and *Adenopeltatum* predominate. The greater number of our species are in the southwestern part of the country and are largely xerophytic in habit.

[1] Reproduced by permission from the Director of the Mo. Botanical Garden, Professor Wm. Trelease, who has kindly loaned the cuts for this purpose.
[2] 11th Report Mo. Bot. Garden, p. 86.

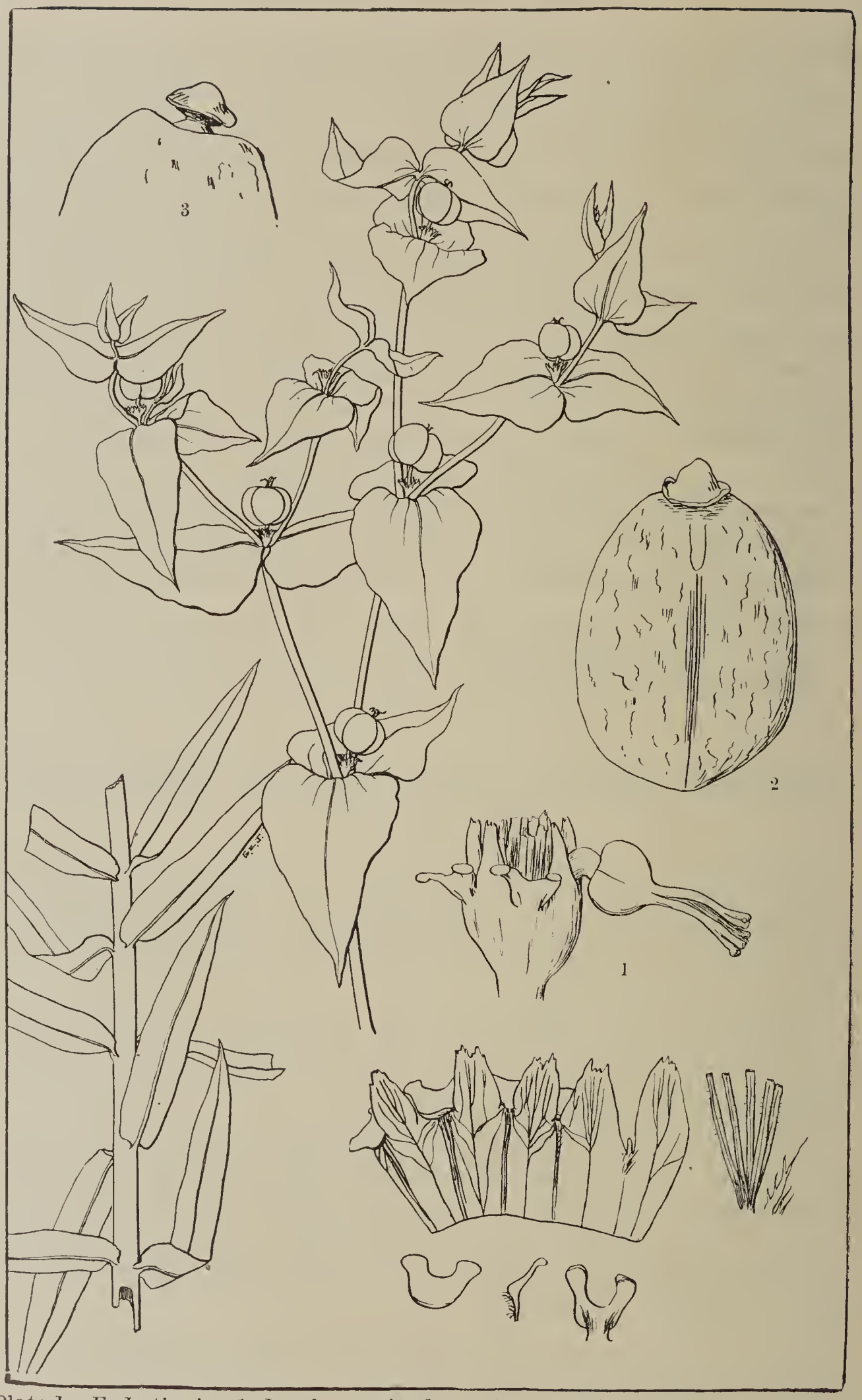


Plate I. *E. Lathyris.*—1, Involucre, glands, and staminate pedicels and bracts; 2, ventral view of seed; 3, lateral view of caruncle.

Plate II. *E. Helioscopia.*—1, Leaf; 2, involucres, staminate pedicel with bracts; 3, bracts, much enlarged; 4, capsule; 5, seeds.

Plate I. shows *E. Lathyris* L., an annual, 4 to 10 dm. high, with a smooth, single erect and glaucous stem. The leaves are sessile or very short petioled below, the cordate or rotund base linear lancolate or lanceolate, 4 to 12 cm. long and 8 to 20 mm. wide.

Seeds: ovoid, truncate, a broad shallow groove in front, wrinkled, dirty brown color with darker spots, 4 to 4.5 mm. long, 3 to 3.5 mm. wide, 3.5 mm. thick.

It was introduced from Europe into various parts of the United States and is found in the eastern states along the mountains where it may possibly be indigenous. It is also found in Texas, California and New Mexico.

Among the common names[3] by which this plant is known are wild caper, caper bush, myrtle or caper spurge, mole tree, mole plant and spring-wort.

The seeds,[4] which were formerly used under the name of *semen cataputiæ minoris*, yield an expressed oil which is purgative and deposits a crystalline mass upon standing. Aesculetin[5] is also one of its constituents.

Plate II. shows *E. Helioscopia* L., an annual with a single stem 1 to 3 dm. high, 3 to 6 mm. thick, sometimes sparingly branched at the base or below the umbel. Stem leaves, spatulate obovate serrate, obtuse or retuse, the lower attenuate into a petiole. 3 to 4 cm. long, 3 to 15 mm. wide, umbel leaves similar but larger.

Seeds: ovoid, subglobose, acute at apex, yellowish-brown, 2 mm. long, 1.5 mm. in diameter, areolae on the surface, 2 to 3 mm. wide. Caruncle transversely elliptical, vertical.

It grows in waste places in the lake regions of the northeast United States and Canada. Introduced from Europe.[6]

It is known by a number of common names,[7] as, sun spurge, wartweed, sunweed, turnsole, little good, cat's milk, wolf's milk, churnstaff, wart grass and mouse milk.

The juice is said to remove warty growths.

Among euphorbias used in medicine not included in the section *Tithymalus* are *E. resinifera* Berg., from which the gum resin euphorbium is obtained; *E. corollata* L. and *E. hypericifolia* used by eclectic physicians; *E. Ipecacuanha* L. or American ipecac, and *E. pilulifera*, commonly known as pill bearing spurge.

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[3] Britton & Brown, Ill. Flora of N. States & Can., vol. II, p. 377.
[4] King's Am. Disp., 18th ed., vol. I, p. 748.
[5] Ibidem; from Chem. Ztg., 1889, p. 1706.
[6] 11th Rep. Mo. Bot. Garden, p. 110.
[7] Britton & Brown, Ill. Flora of N. U. S. and Can., vol. II, p. 379.

# Lack of Uniformity in the Naming of Reagents.

By *W. O. Richtmann.*

Greuber* asks for some uniform system of naming some of the chemicals which are generally used, and are liable to be found in varying strengths. Such uniformity is urged for the purpose of obtaining somewhat similar results by chemists in different countries. He recommends some such naming of reagents as the following:

| Name. | Sp. g. | | Percentage content. |
|---|---|---|---|
| 1. Sulphuric acid | 1.40 | — | 50 p. c. $H_2SO_4$ |
| 2. Concentrated sulphuric acid | 1.84 | — | 100 " " |
| 3. Hydrochloric acid | 1.12 | — | 24 " HCl |
| 4. Concentrated hydrochloric acid | 1.20 | — | 39 " " |
| 5. Nitric acid | 1.20 | — | 32 " $HNO_3$ |
| 6. Concentrated nitric acid | 1.52 | — | 100 " " |
| 7. Ammonia water | 0.96 | — | 10 " $NH_3$ |
| 8. Concentrated ammonia water | 0.91 | — | 25 " " |

This tabulation led M. Holz† to tabulate the specific gravities and percentage strengths of the three above mentioned acids and ammonia water and their diluted form, as specified in seven different pharmacopœias. It was thought desirable to extend the compilation to other pharmacopœias not given in the table of Holz, especially since several which are frequently referred to by writers in this country are among those omitted.

| | Acidum hydrochloricum. | | Acidum nitricum. | |
|---|---|---|---|---|
| | Sp. gr. | Percent. | Sp. gr. | Percent. |
| Pharm. Austr. (ed. sept.) | 1.120 | 23.86 | 1.300 | 47.45 |
| " Belg. (ed. sec.) | 1.180 | 35.20 | 1.330 | — |
| " Brit. '98. | 1.160 | 31.79 | 1.420 | 70.00 |
| " Dan. '93. | 1.124 | 25.00 | 1.180 | 29.00 |
| " Gallic. '84. | 1.171 | 34.40 | 1.390 | 63.60 |
| " Germ. III. | 1.124 | 25.00 | 1.153 | 25.00 |
| " Helvet. (ed. tert.) | 1.124 | 25.00 | 1.153 | 25.00 |
| " Ital. '92. | 1.180 | 35.20 | 1.400 | 65.00 |
| " Nederl. (ed. tert.) | 1.126 | 25.00 | 1.317 | 50.00 |
| " Norv. (ed. tert.) | 1.127 | 25.00 | 1.180 | 29.00 |
| " Port. '76. | 1.180 | 35.20 | 1.300–1.330 | 40.7—44.8 |
| " Span. (ed. sex.) | 22° B. | — | 35° B. | — |
| " Svec. (ed. sept.) | 1.124 | 25.00 | 1.180 | 29.00 |
| " U. S. (ed. oct.) | 1.163 | 31.90 | 1.414 | 68.00 |

* Chem. Ztg., 1900, No. 1.
† Apoth. Ztg., 15, p. 54.

| | Acidum sulphuricum. | | Acidum sulphuricum dilutum. | |
|---|---|---|---|---|
| | Sp. gr. | Percent. | Sp. gr. | Percent. |
| Pharm. Austr. (ed. sept.) | 1.840 | 96.00 | 1.120 | 16.66 |
| " Belg. (ed. sec.) | 1.840 | —— | 1.110–1.120 | —— |
| " Brit. '98. | 1.843 | 98.00 | 1.094 | 13.65 |
| " Dan. '93. | 1.840 | 98.00 | 1.081–1.085 | 12.00 |
| " Gallic. '84. | 1.843 | ca. 100.00 | —— | 10.00 |
| " Germ. III. | 1.836–1.840 | 94.00–98.00 | 1.110–1.114 | 15.60–16.20 |
| " Helvet. (ed. tert.) | 1.836–1.840 | 94.00–98.00 | 1.069 | 10.00 |
| " Ital. '92. | 1.835 | 94.00 | 1.134 | 18.80 |
| " Nederl. (ed. tert.) | 1.837–1.840 | 94.00–96.00 | 1.111–1.114 | 15.70–16.00 |
| " Norv. (ed. tert.) | 1.842 | 98.00 | 1.081–1.085 | 12.00 |
| " Port. '76. | 1.840 | 98.00 | —— | —— |
| " Span. (ed. sex.) | 66.6° B. | —— | —— | —— |
| " Svec. (ed. sept.) | 1.840 | 98.00 | 1.081–1.085 | 12.00 |
| " U. S. (ed. oct.) | 1.830 | +92.50 | 1.070 | 10.00 |

| | Acidum nitricum fumans. | | Aqua ammoniæ. | |
|---|---|---|---|---|
| | Sp. gr. | Percent. | Sp. gr. | Percent. |
| Pharm. Austr. (ed. sept.) | 1.450–1.500 | 77.28–94.09 | 0.960 | 10.00 |
| " Belg. (ed. sec.) | 1.520 | —— | 0.935 | 17.00 |
| " Brit. '98. | —— | —— | 0.959 | 10.00 |
| " Dan. '93. | 1.480–1.500 | 86.00–91.00 | 0.960 | 10.00 |
| " Gallic. '84. | —— | —— | 0.925 | 20.00 |
| " Germ. III. | 1.450–1.500 | 77.28–94.09 | 0.960 | 10.00 |
| " Helvet. (ed. tert.) | 1.450–1.500 | 77.28–94.09 | 0.960 | 10.00 |
| " Ital. '92. | —— | —— | 0.925 | 20.00 |
| " Nederl. (ed. tert.) | —— | —— | 0.958–0.960 | ca. 10.00 |
| " Norv. (ed. tert.) | 1.480–1.500 | 86.00–91.00 | 0.960 | 10.00 |
| " Port. '76. | —— | —— | 0.916 | —— |
| " Span. (ed. sex.) | —— | —— | 22° B. | —— |
| " Svec. (ed. sept.) | 1.490–1.500 | —— | 0.960 | 10.00 |
| " U. S. (ed. oct.) | —— | —— | 0.960 | 10.00 |

From the above compilation it will be seen that there is practically no uniformity in these chemicals as recognized by the most important if not practically all pharmacopœias. Sulphuric acid is the one which approached the nearest to a uniform product. The lowest being that of the U. S. P. and the highest that of the French. In the case of ammonia water, all require 10 p. c. excepting the French and Italian, which require 20, and the Belgian 17 p. c.

An approximate uniformity in the above chemicals is to be noticed in comparing countries whose customs and habits have much in common. Thus the acids in the German, Swiss and Netherland pharmacopœias are practically of the same strength. The same is true of those of the Danish, Norwegian and Swedish pharmacopœias.

Those of the U. S. P. and B. P., however, do not show such uniformity, nor do they agree with the standards of others.

The arguments for uniformity in the strength of chemicals apply as well for therapeutic and physiological reasons as for chemical reasons, and hence the pharmacopœias should make a special effort to establish such uniformity in chemicals and galenicals where there is much possibility of intercourse of the different nationalities.

Laboratory of Practical Pharmacy.

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# Notes on Coniferous Oils II.

By *Edward Kremers.*

**Oil from Pinus Sabiniana.**

The discovery of a normal heptane in the oil from *Pinus sabiniana* was a great surprise to chemists interested in the subject. The fact that a "turpentine oil" should exist that seemed to be devoid of pinene was certainly remarkable and disposed of the old idea that pinene was quantitatively at least the principal constituent of all coniferous, or more especially of all turpentine oils. In the oil under consideration the pinene seemed to be totally displaced by normal heptane.

It is true that more recent chemical research had revealed the fact that paraffin hydrocarbons were not as scarce in volatile oils as once supposed. In the oil of rose a considerable quantity of such hydrocarbons is to be found. The one remarkable thing, however, about the occurrence of heptane in *P. sabiniana* was, that even when paraffin hydrocarbons were present in small quantity only, these evidently existed not individually, but as complex mixtures. In the oil of *Pinus sabiniana*, however, we have apparently not only the utter displacement of pinene by paraffin hydrocarbons, but the occurrence of practically one hydrocarbon in place of the usual mixture.

The surprise and even skepticism caused by the results recorded by several investigators, whose names place their investigations be-

yond doubt as to chemical accuracy, is possibly best shown by quoting the final paragraph in the article on "Turpentine oil from Pinus sabiniana" from Gildemeister and Hoffmann's excellent treatise on volatile oils. After a brief review of the literature on the subject, the second author remarks: "These statements are to be accepted with caution and require to be confirmed. May it not be that Wenzell's abietene was a fraction of petroleum?"

This is a rather strange query to raise for a person so familiar with the subject of volatile oils and the difficulties of fractionation. To obtain a fraction of constant boiling point from petroleum that in any measure corresponds with the properties of normal hexane would be quite an undertaking. It certainly would not pay to put such a product on the market as a substitute for petroleum benzin, no matter how fanciful the name. This *a priori* argument might be considered sufficient to dispose of the matter. Yet the very fact that the question has been raised by an expert authority seems to make a review of the subject desirable.

In order to properly understand the present status of our knowledge of this peculiar pine product, it will be necessary briefly to review the literature on the subject. In December 1871 W. Wenzell[1] read a paper before the California Pharmaceutical Society in which he discusses some of the physical and chemical properties of a hydrocarbon obtained from *Pinus sabiniana* Douglas (commonly known as nut pine or Digger pine). Its inertness toward reagents in general and its substitution by chlorine were recognized. By way of contrast, comparisons were drawn with other oils containing terpenes, but the fact that the hydrocarbon might be a paraffin apparently was not suspected, although he states that as an article of commerce the oil had "acquired during the last eight or ten years a considerable reputation under the name of abietene, erasine, aurantine, etc., for the removal of grease and paint from clothing, fabrics etc., an efficient substitute for petroleum benzine."

This statement together with the boiling point and specific gravity of the oil caused Thorpe[2] (1879) to suspect normal heptane. He made an elementary analysis, carefully studied the physical properties of the oil and of its principal constituent and identified it with normal heptane.

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[1] Am. Journ. Pharm., 44, p. 97.
[2] Journ Chem. Soc., 331, p. 296.

Inasmuch as the heptane from *P. sabiniana* was found to have a somewhat different specific gravity from that obtained from azelaic acid and petroleum, Schorlemmer and Thorpe[3] in 1883 made a chemical examination of the hydrocarbon. By chlorination the mixed primary and secondary chlorides were obtained and these were converted into the acetates. Upon saponification the acetic acid esters yielded the corresponding alcohols which were separated by fractionation and identified. The one upon oxidation yielded heptoic acid, the other methyl pentyl ketone.

In 1881, Venable[4] examined the same material and arrived at results confirming the conclusions of Thorpe and Schorlemmer. Venable and Grisson[5] in 1888 also studied the action of chlorous acid on heptylene derived from hepatene from the same source.

The question of identity of the hydrocarbon which constitutes almost the entire oil with normal heptane seems, therefore, to have been settled beyond reasonable dispute. The source of the oil, however, has given rise to differences of opinion.

In 1879 Sadtler[6] examined an oil obtained from the San Francisco market which was supposed to be derived from *Pinus ponderosa*. It resembled closely the oil examined by Wenzell and like the latter, Sadtler applied reagents and methods then commonly used in the study of the terpenes. Consequently he also obtained no positive results. Soon after Thorpe's first paper appeared and Sadtler called attention to it.[7]

In 1888 Samuels,[8] a student of Prof. Wenzell, examined the oleoresin of *P. sabiniana*, more particularly the resin. The thesis gives a brief account of the tree as described in the "Geological Survey of California," its distribution in California and a brief description of the preparation and properties of the oleoresin and oil. He then reports his special examination of the resin.

In a personal communication to the writer, dated Dec. 12, 1895, Professor Wenzell writes as follows: "I have requested R. M. Green & Co., Oroville, Cal., to forward to you as requested 2 or 3 galls. of abietene with a cone of the tree (*Pinus sabiniana*) from which the

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3 Annalen, 217, p. 149.
4 Ueber einige Derivate des Heptans von Pinus sabinianes, Göttingen.
5 Am. Chem. Journ. 10, p. 225.
6 Am. Journ, Pharm., 71, p. 176.
7 Am. Journ. Pharm., 51, p. 293.
8 Pharm. Rec., 8, p. 39.

abietene is obtained, and also a pound or two of the resin from which the article is distilled. I ventured to do this in order to prove to you that this hydrocarbon is the product of this conifer only and not of the *Pinus ponderosa*, the cone of which measures between 2 and 4 inches, never exceeding the latter length, and also that the resinous exudation of the latter resembles the *Terebinthina communis* of the shops both as to general appearance and smell. In connection with this subject I would state that about 8 or 9 years ago a student of the college made an investigation on the hydrocarbon obtained in the *Pinus ponderosa* in my laboratory and under my supervision. The pupil, a Miss Goodspeed, sent to Virginia, Nev., to have the pitch collected expressly for her from this pine, and the cone for identification. The cone was identified with a similar labled specimen in the Cabinet of the California Academy of Sciences and with its description in the Flora of California. The connecting link between the pitch and the tree yielding it having been fully established, Miss G. proceeded to the examination. On distilling the pitch in the usual way, a liquid was obtained which corresponded in sp. gr., boiling point and smell with the common oil of turpentine. I send you by mail the two vials illustrating the results: a specimen of the distillate and terpene hydrochlorate formed by the action of HCl. Hence the positive proof that *Pinus ponderosa* does not yield a heptane, but a terpene, and the liquid which Prof. Sadtler supposed to be as he was informed the product of *P. ponderosa* was in reality obtained from the *P. sabiniana.*"

The letter from Messrs. Green & Co., accompanying the shipment of a number of specimens, has unfortunately been lost in the rearrangement of the drug cabinet of the University. Unfortunately also, the student who examined the material kindly provided by Prof. Wenzell, had to leave in the midst of his work and has left no notes. The writer, however, remembers very well that the distillate from the oleoresin corresponded with the commercial abietene. There can, therefore, no longer be a reasonable doubt as to the occurrence of the hydrocarbon heptane in a conifer. In their letter, Messrs. Green also mentioned that another species than *P. sabiniana* was coming to be regarded as the source of abietene, but not *P. ponderosa*.

Finally, attention should be called to a comparatively recent note by the late Professor Trimble[9] in 1897. He states that while *P.*

[9] Garden and Forest, 10, p. 202.

*sabiniana* was regarded the source of abietene by Wenzell, and *P. ponderosa* by Sadtler, that *Pinus Jeffreyi* is now (1897) considered as the commercial source. He distilled the bark of *P. sabiniana* and of *P. ponderosa* and obtained small amounts of oil having the odor of abietene. He supposes, therefore, that all of these species may produce abietene.

*Botanical Source of Material.*—Wenzell, who first called attention to the peculiar composition of the oil, evidently obtained his material from the open market. He states that the oil is derived from *Pinus sabiniana* Douglas, but does not mention on what authority he makes the statement. Seven years later Sadtler obtained an "oil of turpentine" also from the San Francisco market which, he was informed, was derived from *Pinus ponderosa*.. In this case also no authority is given. The work of Thorpe, Schorlemmer and Venable throws no light whatever on the question of botanical source, they having obtained their material through Prof. Wenzell. The precautions that the latter took in having the material identified which was used by Miss Goodspeed and also by the writer are mentioned in the quotation from his letter. Trimble, in reviewing the botanical source of "abietene," states that the bark of *P. sabiniana* and of *P. ponderosa* when distilled by him yielded oils having the odor of commercial abietene. He does not, however, deny the claim made by some one—by whom he does not state—that most of the commercial abietene is obtained from *P. Jeffreyi.* Neither does he state what authority he had for supposing the bark examined by him to be of the source mentioned.

The entire question as to the botanical source of abietene is therefore still more or less an open one and it is to be hoped that some one in the western states will take the trouble to investigate the matter carefully. Expert botanical assistance in the identification of the trees should be sought in order to remove all doubts as far as possible. The question is of sufficient interest to warrant a careful botanical and chemical examination. Indeed, all parts of the trees should be examined chemically as to the oil contained in them.

At the request of the writer, Professor Cheney, Professor of Pharmaceutical Botany at the University, has prepared the following account of the three species in question. The genus *Pinus* is subclassified as follows:

*Pinus.*

Section I. *Pinaster.*

Subsect. 1. *Pinea.*

" 2. *Taeda*, about 16 species, chiefly N. American, including:

*P. sabiniana.*

*P. ponderosa.*

*P. jeffreyi.*

Subsect. 3. *Pseudostrobus.*

Section II. *Strobus.*

Subsect. 1. *Eustrobus.*

" 2. *Cembra.*

By some authorities the species *P. ponderosa* and *P. jeffreyi* are regarded as one, the latter name being regarded merely as a synonym.

**Synonomy and distribution of Pinus sabiniana Dougl.**

SCIENTIFIC NAMES:

*P. sabiniana* Dougl. in Trans. Linn. Soc. XVI. 249.

*P. sabinii* " in Companion Bot. II. 150.

COMMON NAMES:

Sabine's pine (California).

Gray-leaf pine (California).

RANGE:

N. A.: California, Shasta County and southward in foot hills of coast ranges and on western slopes of Sierra Nevada Mountains.

**Synonomy and distribution of Pinus ponderosa Laws.**

SCIENTIFIC NAMES:

*P. resinosa* Torr.

*P. ponderosa* Dougl.

*P. benthamiana* Hartweg.

*P. brachyptera* Engelm.

*P. macrophylla*? Torr.

*P. beardsleyi* Murray.

*P. craigana* Murray.

*P. sinclairiana* Corrière.

*P. engelmanni* Torr.

*P. parryana* Gord.

*P. nootkatensis* Manette.

*P. ponderosa benthamiana* Vasey.

*P. ponderosa brachyptera* (Engelm.) Lemmon.
*P. ponderosa nigricans* Lemmon.
*P. jeffreyi ambigua* Lemmon.

COMMON NAMES:

Yellow pine (Cal., Colo., Mont., Idaho, Utah, Wash.)
Bull pine (Col., Wash., Utah, Idaho, Oreg.).
Big pine (Mont.).
Long-leaved pine (Utah, Nev.).
Red pine.
Pitch pine.
Southern yellow pine (var. *brachyptera*).
Heavy-wooded pine (Eng.).
Western pitch pine.
Heavy pine (Col.).
Foothills yellow pine (*P. benthamiana*).
Sierra brownbark pine (var. *nigricans*).
Montana black pine (var. *ambegua* (Col. lit.).
"Gambun parry's pine" (Eng. lit.).

RANGE:

N. A.: From British Columbia and the Black Hills region of Dakota southward in the Pacific and Rocky Mountain region to western Texas and Mexico.

**Synonomy and distribution of P. jeffreyi. "Orig. Com."**

SCIENTIFIC NAMES:

*P. jeffreyi.* "Orig. Com."
*P. deflexa* Torr.
*P. ponderosa jeffreyi* Vasey.
*P. jeffreyi nigricans* Lemmon.
*P. jeffreyi deflexa* (Torr.) Lemmon.
*P. jeffreyi peninsularis* Lemmon.
*P. jeffreyi cortex-nigra* Lemmon.
*P. jeffreyi montana* Lemmon.

COMMON NAMES:

Bull pine (Cal.).
Black pine (Cal.).
Western black pine (Cal. lit.).
Pinos (Cal.).
Truckee pine (Nev.).
Sapwood pine (Cal.).

Jeffrey pine (Cal. lit.).
Black bark pine (var. *nigrica* and *cortex-nigra*) (Cal. lit.).
Red bark pine (*P. deflexa*) (Col. lit.).
Peninsula pine (var. *peninsularis*) (Cal. lit.).
Sierra red bark pine (var. *deflexa*) (Cal. lit.).
Peninsula black pine (var. *peninsularis*) (Cal. lit.).

RANGE:

California: Scotts Mountain in Siskigon County and along Sierra Nevada Mountains to San Bernardino and San Jacinto Mountains. Southern Oregon, Douglas County, 30 miles south of Roseburg.

Most of the above information was obtained from a bulletin of the Forestry Division of the Department of Agriculture. The lists of botanical synonyms and common names show how easy it must be for confusion to arise. It it is to be hoped that the chemical work may be repeated with material collected by botanists who are perfectly familiar with the conifers.

# Medical Commission to the Philippines.*

By *Lewellys F. Barker.*

It is matter of general belief that scientists in the retirement of the laboratory pursue their abstruse investigations oblivious of wars, revolutions, and the manifold variations in the phases of international politics, and it is, perhaps, well on the whole that there is some basis for the belief. But, as a matter of fact, it will be found that the trend of scientific research is, at times, enormously influenced by changes in the outside world; for with these changes new problems arise upon the solution of which depends the ultimate success of national undertaking. No more striking example of such influence could perhaps be adduced than the extraordinary attention which is at present being paid to the study of the causes, prevention and cure of diseases prevalent in the tropics. While there have been, it is true, notable instances of medical research prosecuted with brilliant results in tropical fields in the past, it is only since Northern and Western nations have turned their faces resolutely towards the South

* This report is taken from the Jan. number of the Johns Hopkins Hospital Bulletin. It is unquestionably one of the most interesting reports that have come from our new possessions and deserves to be more generally known. *Ed.*

and the East—faces stern in the determination to hold their own in the fierce international rivalry for conquest and control of trade—that the importance of the medical problems of the hotter regions of the earth has begun to be fully appreciated, and that organized bands of skilled investigators have been sent into them to study the diseases to which a large mass of their fellow countrymen will henceforth be exposed.

The earlier observations on the conditions and diseases of tropical countries we owe to missionaries and explorers, men of roving instincts and venturesome habits, who partly in self-defense, partly from desire to benefit other travelers or the natives of the regions traveled through, observed the sick and examined the methods of treatment in vogue in those lands. All such studies were necessarily fragmentary and of a desultory character, but no one with a knowledge of the subject would speak of them disparagingly, for they represent the beginnings of an important movement, and have been, moreover, attended by valuable discoveries, some of which have proved to be of the greatest benefit to humanity. It is only necessary to mention the introduction of cinchona bark into Europe in the 17th century by the Jesuits, who had seen its beneficial effects in Peru, and to recall the immense part played by its alkaloid, quinine, in the treatment of the malarial diseases to-day, to realize the significance of at least one of these discoveries. Millions of lives have been saved, and whole continents made accessible to civilization, for the dangers of forest and morass have largely ceased to be prohibitive since the white man has learned to carry quinine in his blood.

Later, white traders and white soldiers, the natural successors of missionary and explorer, on entering the tropical regions took with them civil and military physicians, who by virtue of their better medical and scientific training were able to describe climatic conditions, investigate the symptomatology of diseases, and study their causes, nature and treatment far more accurately than their predecessors had done. Thanks to their efforts we are already in possession of an analysis of the more prevalent diseases peculiar to the tropics and of the many facts of importance concerning etiology, pathology, prophylaxis and cure. Among the most fertile in results has been the work done by Fayrer in India, and in Cochin China by Calmette, on snake poison; in Algiers by Laveran, and in India by Ross, on the malarial infections; in Bombay by Vandyke Carter and

Obermeier, on relapsing fever; in China and other countries, by Manson, on filariasis; and in the West Indies and South America, by Sternberg, Guitéras and Sanarelli, on yellow fever.

During the last thirty years, however, remarkable advances have been made in pathological and especially in bacteriological technique. A large number of scientific investigators in all civilized countries have been gradually overcoming difficulties which had hitherto been insurmountable, but which, by the new methods at their disposal could now be satisfactorily attacked. The field of medicine has become so wide and divided into so many departments that one man can scarcely hope to cover all of them. Much as we have to thank civil and military physicians in the past for the good work they have done, we can scarcely ask in the future men who have to devote a large share of their time to the treatment of patients and to the performance of executive functions to undertake the complicated researches necessary for the isolation of the causative agent in obscure diseases. There has to be a division of labor and the practical man must be helped out by individuals who have been especially trained in particular lines of work, and who can give all their time to such work. Accordingly, of late, European governments and educational institutions have been sending into tropical regions men especially prepared and commissioned to investigate disease, and these men have been relieved of all duties except those actually connected with their original research. In this way, Koch and Gaffky went to Egypt and India, in 1883, to study Asiatic cholera, an expedition which resulted in the discovery of the cause of the disease; and at Hong Kong, in 1894, Yersin isolated the bacillus of bubonic plague. That such special investigations of the causes of disease justify the education of specialists and the expenditure of the time and money required is fully evidenced by the practical results which have followed. Cholera, now that the spirillum, the growth and activity of which in human beings cause the symptoms of the disease, is known and its habits of life and mode of dissemination have been studied, can in civilized countries be absolutely controlled; the disease can no longer gain a permanent foothold in a city in which modern methods of sanitation are employed. Plague, which swept away whole populations at a breath in former times, need now scarcely be feared among Western nations; for even if the hygienic precautions of the end of the century fail to keep the disease out of the West, the method of

preventive inoculation which has been devised since the discovery of the causative bacillus will protect those who avail themselves of this prophylactic measure.

In the light of these facts the authorities of the medical department of the Johns Hopkins University decided in March of the present year to send two of their staff, Dr. Simon Flexner and Dr. Lewellys F. Barker, to the Philippine Islands, equipped with a complete outfit for the study of disease by modern clinical and pathological methods. They were instructed to study the diseases which prevail in the islands "with the hope not only of making contributions to the science of medicine, but also of being of service to the American forces in those islands, to the natives of the country, and to humanity at large." The expenses of the expedition were defrayed through the generosity of a few friends of the University. Two advanced medical students, Mr. Joseph Marshall Flint, of Chicago and Mr. Frederick P. Gay, of Boston, went as volunteers and at their own expense to assist in the medical work at Manila. Mr. John W. Garrett, of Baltimore, interested in the political relations of the archipelago, made a fifth member of the party.

The voyage out was made by way of Vancouver, Japan and Hong Kong. Ten days were spent in Japan and the experience there proved of great value as an introduction to the work in Manila, inasmuch as Japanese scientists have studied and, indeed, with considerable success, several of the problems which confront the investigator in the tropics. With Doctors Aoyoma and Miura in Tokyo, several cases of *kakke* were observed, a disease which in the Philippines and in other countries, is more generally known under the name of beri beri.

The researches of the Japanese into the nature of this malady are among the most interesting and important extant. Dr. Aoyoma, who when investigating plague in Hong Kong was himself attacked by the disease and for a considerable period lay in a most precarious condition, showed no ill effects of the ordeal passed through, but was as active and enthusiastic as ever in the observation and treatment of disease. In the laboratory of Dr. Kitasato, the celebrated bacteriologist, of Tokyo, opportunity was afforded for looking into the work done by Dr. Shiga, one of the assistants in that laboratory, on the cause and treatment of dysentery. Dr. Shiga, who has isolated a bacillus which he regards as the cause of epidemic dysentery in

Japan, has also, by inoculation of the bacillus into animals, prepared a curative serum which he believes will be of value in the treatment of human cases.

At Hong Kong, the members of the Commission, through the courtesy of Dr. Lowson, had their first opportunity of studying cases of bubonic plague, clinically in the wards of the isolation hospital and pathologically in the dead-house. The disease is constantly present there, though to a varying degree, among the Chinese inhabitants, Europeans being occasionally, though but rarely, attacked. A member of the Commission, speaking of experience with plague, remarked upon the curious mental phases passed through on encountering for the first time such a world-dreaded disease. During the first visit to the morgue in which the dead bodies of plague patients were kept, great care was taken to come into no personal contact with the dead, and even draughts of air leading from the vicinity of the cadavers were avoided. On the second day, the swellings (or buboes) in the groin, axilla or neck were palpated, but with some care; and on the third day, they found themselves making post-mortem examinations of the internal organs. Though Dr. Aoyoma developed the disease as a result of his studies; and Dr. Müller, of Vienna, died from plague contracted while attending a nurse sick of it, it is probable that pathologists, provided they take the necessary precautions to avoid infection, have less to fear than is ordinarily supposed. If one work much with the disease, however, he would be very unwise did he not take advantage of the protection afforded by Haffkine's preventive inoculation.

The members of the Commission arrived in Manila at the beginning of May and at once, thanks to letters from Surgeon-General Sternberg, and the courtesy of Colonel Woodhull, the chief surgeon of the American forces in the islands, were enabled to begin their work in the military hospitals there. The majority of the American sick in Manila are cared for in two large base hospitals known respectively as the First and Second Reserve Hospitals. In the former institution, with Major Crosby in control, are some twelve hundred patients; while in the latter, under the management of Captain (now Major) Keefer, there are perhaps one-fourth as many. As soon as the patients are convalescent, those who require further building up are sent to the pleasantly situated Convalescent Hospital on Corregidor Island. This hospital is situated on the shore snugly nestled

beneath the fort which fired on Admiral Dewey's ships as he entered Manila Bay. In addition to the military institutions mentioned, there are numerous "district" and "regimental" hospitals in Manila, Cavite and other places where American troops are stationed. It was a matter of pleasant surprise to see how efficiently large military hospitals, seven or eight thousand miles away from home, could be organized for medical and surgical work. Whatever criticisms may have been made in America with regard to the administration of military affairs, nothing but praise is to be recorded of the medical services rendered by Colonel Woodhull and his staff in the Philippine campaign.

On account of the especial facilities and material obtainable at the First Reserve Hospital, working headquarters were established there, Lieutenant Strong generously sharing his laboratory with the newcomers, and in every way possible, lending his aid to the investigations undertaken. The time at their disposal being limited, the members of the Commission decided to choose, out of the many attractive problems which immediately suggested themselves for investigation, certain only which seemed to them of the greatest importance and which could be most advantageously approached. It was found that among the American soldiers in Manila the two most fatal diseases in May and June were dysentery and typhoid fever, while among the natives tuberculosis and beri beri were common and destructive maladies. The dysenteries and tropical diseases of the liver met with were made the object of especial study, and one of the most important results of the expedition was the isolation by Dr. Flexner, from the dejecta of patients, of a bacillus which is almost certainly the cause of the acute dysentery studied. The causative agent in this disease once known, it is perhaps not too much to hope that a preventive inoculation may be devised which will render individuals going to the islands immune from attack. Such a prophylactic measure if invented would be of incalculable value, since, according to an authoritative text book, "In the tropics dysentery destroys more lives than cholera, and it has been more fatal to armies than powder and shot." Malarial fevers are frequently encountered, and in Manila the parasites of the tertian and of the æstivo-autumnal variety are easily demonstrable in the blood of patients suffering from these types of the infection. The frequency and malignancy of the cases vary with the locality and with the

season of the year. The deadly *calentura perniciosa* is much feared in certain districts, and as soon as the country is settled this form of malaria should be thoroughly studied. The forests of the interior of Mindoro and the regions adjacent to the Rio Agusan in Mindanao are localities of unusual interest in this connection. The relation of mosquitoes to malaria, so vital a question at the moment, is one well worthy of attack in the Malayan archipelago. Not uninteresting too, in passing, is the statement in certain of the Jesuitical records of Mindanao that the natives of that island recognized as far back as two centuries ago a relation between the intermittent fevers and the prevalence of mosquitoes.

(To be continued.)

# MONTHLY REVIEW.

## Pharmaceutical Technique.

**A New Apparatus for the Preparation of Plant Ash for Analysis.**—G. M. Tucker has simplified and improved the apparatus described by Shuttleworth (J. f. Landw., 47, p. 173). The combustion takes place in a closed space, with the addition of calcium acetate, and the air is not pressed in, but sucked through. The apparatus is shown in fig. I. The cover of the platinum vessel *a* has two openings. Into the central one is soldered a tube *b* extending to the bottom of the vessel and through which a platinum stirrer is passed. Through the side opening is passed the platinum tube *f*. The latter is connected with a glass tube, which conducts the escaping gases into a

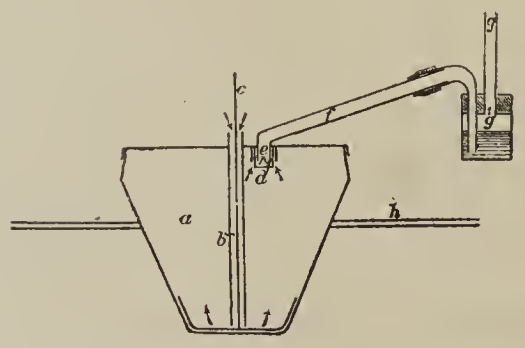



Fig. I.
Cross section of platinum apparatus (¼ nat. size).
*a*—platinum vessel, *b*—tube for air, *c*—stirrer, *d*—removable cap, *e f*—exhaust tube for air, *g*—small wash bottle, *h*—asbestos plate.

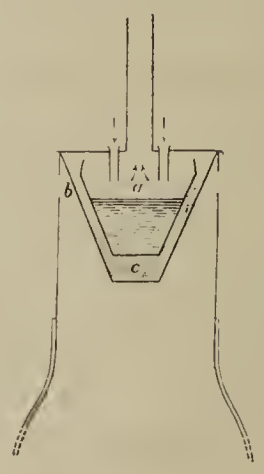
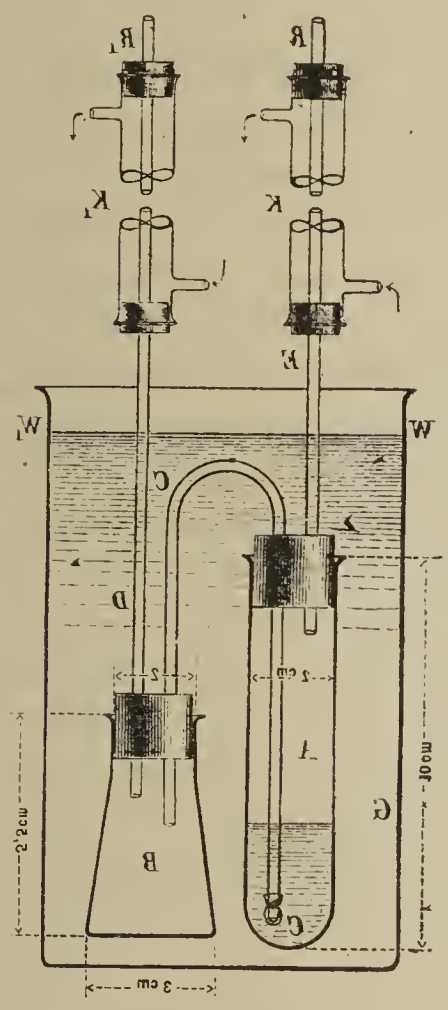



Fig. II.
Cross section of oven (⅛ nat. size).
*a*—platinum vessel, *b*—iron oven, *c*—sand.

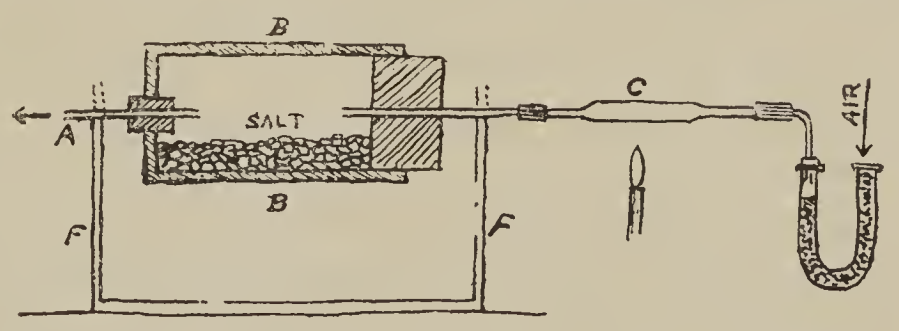
small wash bottle, in which the volatile portions of the ash constituents which may have been carried with the gases are retained. The mechanical scattering of the ash by the air current is prevented by the platinum cap *d*, which lightly closes the opening *e*. The vessel *a* is first heated in a suitably constructed sandbath (fig. II) and then in an asbestos ring *h* over a free flame. The apparatus is made by the firm Heraeus in Hanau, Germany.

[Berichte, 32, p. 2583.] *O. S.*



**Apparatus for Determining Solubility.** — Br. Pawlewski describes a simple and cheap apparatus for making solubility determinations, as shown in the figure. In the test tube *A* is contained the solvent and the substance to be dissolved. The tubes *R* and $R_1$ are provided at their ends with rubber tubes. By the suction of air at *R* a mixture of the solution and thus a saturation is effected. The saturated solution can then be forced over into *B* by blowing at *R*. *B* is then weighed with the solution and the solvent evaporated. The mouth of the tube *c* is wrapped with linen or gauze, so as to filter the liquid before transferring it to *B*. The whole apparatus is placed in a bath of the required temperature. The tubes *R* and $R_1$ can be provided with small condensers *K* and $K_1$ when volatile solvents are employed. The apparatus is said to give good results. [Berichte, 32, p. 1040.] *O. S.*

**Device for Drying Crystalline Salts.** — F. H. Getman has devised the apparatus shown in the accompanying sketch. *BB* represents a large sized porous cup through the bottom of which is bored a hole large enough to receive a good-sized single-hole cork. The mouth of the cup is also fitted with a cork through which passes a single hole, the axis of which passes through the hole in the bottom. These corks are fitted with glass tubing, as shown, and the whole placed in a frame *FF*, which may be made from an ordinary box. The tube passing through the large cork is connected either directly with the drying tube *D*, or with *D* through the hard glass tube *c*. The tube *A* is connected with an aspirator. The salt to be dried is placed in *BB*, the corks inserted tight, the cup placed on its supports, connections made with the



drying tube and then the aspirator started at *A*. From time to time the cup is slowly turned, thus exposing both a fresh surface of cup to the salt and also a fresh surface of salt to the current of air. If it is desired to use warm air, the tube *c* may be inserted in the train and heated to any desired temperature. [Chem. News, 81, p. 91.] *O. S.*

## Chemistry.

**The Volumetric Estimation of Boric Acid.**—According to Bernhard Fischer, Joergensen's method of estimating boric acid is reliable whether present as borax or free acid, and organic acids or salts do not interfere. The substance is dissolved in water, enough sodium potassium carbonate added to combine with the boric acid, the mixture evaporated and then heated to destroy organic matter (a blast-lamp may be used without loss of boric acid). The fused mass is dissolved in water, filtered, a drop of methyl-orange T. S. added and then sufficient sulphuric acid to render the cold solution distinctly red. A few drops of hydrochloric acid are next added and the solution boiled to expel carbon dioxide. When the liquid is cold, it is rendered just alkaline with seminormal sodium hydrate and then exactly neutral with a drop of seminormal sulphuric acid, this point being indicated by the yellowish-red color of the solution. To this solution 50 cc. of glycerin and a few drops of phenolphthalein T. S. are added and then titrated with seminormal NaOH until red. If now the addition of more glycerin decolorizes the liquid, enough sodium hydrate is added to complete the titration. Usually a drop or two of alkali is sufficient and the decolorization is to be ascribed to the glycerin. Hence the acidity of the glycerin should be determined and subtracted from the result. A series of estimations show that sodium acetate, citrate, benzoate and tartrate do not interfere in this estimation. It cannot be used to estimate boric acid in meat, the results being too high on account of $P_2O_5$ present. To determine boric acid in butter substitutes, 10 gm. of oleomargarine are saponified with potassium hydrate and the soap burned, and then proceed as above.

[Unters. Nahr. Genussm., 3, p. 17;
through Chem. Centralbl., 71, 1, p. 515.] *W. A. P.*

**The Volumetric Estimation of Potassium.**—R. H. Adie and T. B. Wood base a volumetric method upon the formation of potassium cobalt nitrite.

The method proposed by the authors is to precipitate the potassium as the cobalt nitrite compound (of which the formula is usually given as $K_6Co_2(NO_2)_{12}3H_2O$), and to titrate the nitrite with a standard solution of potassium permanganate in acid solution. The experiments so far seem to show that there are three, instead of two, nitrite groups for each atom of potassium, and that the precipitate they obtain is probably an acid salt, as the ratio of the cobalt to the nitrite is that indicated by the above formula. The method is as

follows:—The solution containing the potassium to be estimated is freed from other bases, as far as possible, by means of sodium carbonate, then concentrated if the solution is at all weak, acidified with acetic acid, and excess of solution of sodium cobalt nitrite added. The mixture is allowed to stand for twenty-four hours, the precipitate collected on a Gooch filter, washed several times with 10 percent acetic acid and finally once with water. The asbestos filter and the precipitate are now transferred to a beaker and boiled with a dilute solution of soda, filtered and made up to 100 cc. Of this solution 20 cc. are taken, acidified with dilute sulphuric acid and rapidly titrated with the permanganate solution. A second fraction of 20 cc. is taken, and to this the amount just found of permanganate solution is added, then acidified, and the end-point again determined. In one estimation, the volumes required were 16.3 and 16.4 respectively. The end of the reaction is more easily obtained if the permanganate is added to the nitrite solution in excess, and the excess determined by potassium iodide and thiosulphate solution.

On testing the method with pure potassium salt, it was found that the results, whilst very concordant amongst themselves, were too high in almost exactly the proportion 3 to 2; 1 cc. of the permanganate solution used was in this way found to correspond only to 0.0077 gramme of $K_2O$ instead of to 0.01175, the value calculated from the formula given above. This seems to indicate for the precipitated salt some formula such as $K_2HCo(NO_2)_6$.

As examples of the accuracy of the method the authors found that a sample of kainite gave by it 12.13 percent $K_2O$ and the platinochloride method 12.03 percent $K_2O$; commercial potassium sulphate, 50.44 percent by this and 50 percent by the platinochloride method.

[Chem. & Drug., 56, p. 289.] *W. A. P.*

**Arsenic in Animal Organs.**—According to A. Gautier, arsenic is constantly present in the thyroid gland, apparently, like phosphorus and iodine, combined in the nucleins. When thyroid glands are submitted to peptic digestion, the peptones are absolutely free from arsenic, but the residual nucleins are relatively rich in that metalloid. Arsenic is also found in minute quantities in the spleen and in the skin, but no other organ gives even the faintest trace. This precise limitation of its occurrence has important toxicological significance, since its presence, even in minute trace, in any but the organs specified, is regarded as abnormal.

[Pharm. Journ., 64, p. 41; from C. r., 129, p. 929.] *E. K.*

**Explosion of Potassium Chlorate.**—Although potassium chlorate is not generally considered a detonating explosive, Berthelot finds that when suddenly introduced into surroundings previously heated to a temperature above that at which decomposition commences, it will detonate under ordinary pressure in an open vessel, even when enveloped in an inert gas. In this respect it resembles picric acid. This may be shown experimentally in

the following manner. A glass tube 25 to 35 mm. in diameter closed at one end, and fixed almost vertically, is heated in a gas flame to a red heat for about 25 to 30 mm. of its length; in the meanwhile, a glass rod, drawn out to a thread, is dipped several times into a melted mass of $KClO_3$, each coat of the melted salt being allowed to cool before a fresh immersion is made. In this way a bead of the salt is formed at the end of the thread. This is then plunged into the red hot tube to about 10 mm. from the bottom, taking care not to touch the sides. As the chlorate liquefies under the influence of heat radiating from the sides of the tube, it slowly drips on the bottom, and as each drop falls, a sharp detonation, accompanied by white fumes, will be obtained. The detonation, however, does not affect the melted salt, which remains adherent to the glass thread. The chlorate detonates more markedly when heated direct in a hydrocarbon flame. The conditions cited above may easily be reproduced in the case of a great fire, where the walls of a warehouse may become heated as described; this probably explains the recent fatal explosion at the chlorate works of the United Alkali Company at St. Helens.

[Pharm. Journ., 64, p. 41; from. C. r., 129, p. 926.] *E. K.*

**Coloring Matter of Digitalis Lutea.**—From the residue obtained in the preparation of crystalline digitalin from the Hungarian *D. lutea*, Adrian and Trillat have isolated a yellow coloring matter which they consider to be distinct from the digitoflavone of Fleischer and to which they attribute the formula $C_{16}H_{12}O_4$. It is remarkable resistant to the action of chemical reagents, boiling hydrochloric acid does not decompose it, nor is it affected by acetic acid nor by phenylhydrazine. It is insoluble in water, in dilute acids and in petroleum ether, but dissolves in alcohol, in chloroform, and in amyl alcohol. It gives a bright red color with alkali. It is not a decomposition product of chlorophyll and differs from carotin. It forms fine yellow silky felted needles, which melt at 217—218° C.

**Phosphorus in Organic Compounds.**—The following method is employed by C. Marie to destroy organic matter in the determination of the phosphorus combined with it:—The substance is first dissolved in a considerable excess of nitric acid, the solution is heated on the water bath, and a small quantity of finely powdered potassium permanganate is added. This addition is repeated several times, as the red color disappears, until, finally, the red tint persists for five or six minutes. The amount of permanganate requisite will be generally five or six times that of the organic matter. The mixture is then cooled, and a ten percent solution of sodium or potassium nitrite is added, drop by drop, until the precipitated manganese oxide is dissolved, and a perfectly clear liquid is obtained. The solution is then heated to drive off nitrous fumes, and excess of nitric acid, and the phosphorus precipitated

in the usual way, as phosphomolybdate. Care must be taken to wash the phosphomolybdate perfectly free from manganese, otherwise the results will be vitiated, and the magnesium ammonia-phosphate finally obtained will contain manganese. The washings must, therefore, be tested with lead dioxide, and filtration continued until no reaction for manganese is obtained. This method of analysis is much more convenient than the ordinary one of oxidising in a sealed tube. It has given good results in the analysis of glycerophosphates.

[Pharm. Journ., 64, p. 69; from C. r., 129, p. 766.] *E. K.*

**Electrolytic Preparation of Chloroform.**—Lucchini reports on the method of Zambelleti which was exhibited at the electrochemical exposition in Como. A 20 percent common salt solution is heated in a lead distilling apparatus by means of a steam spiral and stirred with a stirring apparatus consisting of coal shovels, which act at the same time as electrodes. When the temperature has reached 100°, acetone is allowed to enter at the bottom of the apparatus. The strength of the current is 5 to 6 amperes. The chloroform is formed because the electric current produces in the common salt solution free chlorine and sodium hydrate; the acetone and chlorine form trichloracetone, and this reacts with the sodium hydrate to form sodium acetate and chloroform:

$$CH_3CO.CCl_3 + NaOH = CH_3COONa + CHCl_3.$$

The chloroform is conducted from the still through a condenser into a cold receiver. The yield is 180 instead of the theoretical 210 percent.

[Pharm. Centr., 41, p. 10; from Chem. Ztg., 1899, Rep. p. 336.] *O. S.*

## Practical Pharmacy.

**Syrupus Aurantii.**—F. W. Haussmann advocates the preparation of syrup of orange as follows: 50 gm. of grated sweet orange peel, taken from the fresh orange and free from the inner white layer, is macerated in 100 cc. of alcohol during 24 hours. The mixture is poured into a narrow percolator and allowed to drain, then alcohol added through the percolator until 100 cc. of percolate have been obtained. 50 gm. of precipitated calcium phosphate (magnesium carbonate, however, is preferred, as a more pleasant syrup results) is mixed with 150 gm. of sugar and then the tincture is added during constant trituration. The mixture is set aside in a moderately warm place until the alcohol is evaporated, and then 300 cc. of water is added to the residue and the mixture turned into a filter, returning the first portions of the filtrate if necessary until clear. In the filtrate dissolve 600 gm. of sugar by agitation without heat and add enough water to make 1000 cc. Strain if necessary. This process is somewhat longer than the present U. S. P. process, but does away with the hot alcohol extraction of the peel and yields a better and more permanent syrup than when the oil of orange peel in some form or other is used direct. [Am. Jour. Pharm., 72, p. 79.] *W. O. R.*

**Syrupus Pruni Virginianae.**—After repeated experiments in regard to changing the method of preparing this syrup, F. W. Haussmann concludes that the glycerin should be made a part of the menstruum, but be cut down one half (75 cc. from 150 cc.) and that the sugar be increased from 700 gm. to 750 gm. Besides the solvent action of glycerin, it is also essential for the prevention of subsequent precipitation in the syrup.

[Am. Jour. Pharm., 72, p. 71.] *W. O. R.*

**Acetous Syrup of Wild Cherry.**—Following the general inclination to employ acetic acid as a solvent, F. W. Haussmann reports that syrup of wild cherry made with an aqueous menstruum containing 10 p. c. of glycerin and 1.0—2.0 p. c. of acetic acid is a very pleasant and permanent substitute for the present official preparation.

[Am. Jour. Pharm., 72, p. 72.] *W. O. R.*

**Syrupus Rosae.**—Continuing his research work on syrups, F. W. Haussmann advises the use of 10 cc. of diluted sulphuric acid added to 300 cc. of water and 125 cc. of fluid extract of rose and allowed to stand two hours, filter and add 750 gm. of sugar to the filtrate, and when dissolved without heat by agitation, strain and add enough water to make 1000 cc. of syrup, instead of simple admixture of the fluid extract and syrup. The first method yields a more clear and pleasant preparation.

[Am. Jour. Pharm., 72, p. 73.] *W. O. R.*

**Basic Bismuth Salicylate.**—L. F. Kebler comments on the preparation, constitution and properties of this bismuth compound. That it is liable to the same variations as are other basic bismuth compounds, can be seen from the table of analysis of seven commercial samples, as to microscopical appearance, physical appearance, percent of $Bi_2O_3$, reaction, percent of moisture, and amount of nitrates and chlorides. The value of specific tests is also discussed. [Am. Jour. Pharm., 72, p. 67.] *W. O. R.*

**Powdered Extracts: Their Mode of Preparation and Extraction.**—According to Wm. E. Jenks, "the impression formerly prevailed, and is undoubtedly entertained to this day by many actively engaged in the advancement of pharmacy that nearly all these products present the same general uniform properties, devoid of individual and distinctive characteristics, and evidently appreciated only in proportion to their permanency as powders. If the average pharmacist should be asked for a descriptive definition, the information elicited would probably be 'A light or dark brown powder, more or less hygroscopic, possessing in a moderate degree the physical properties of the drug and a heavy predominating, or what may be described as a charred, odor.' An examination of the standard powdered extracts of to-day would be a revelation to many who entertain such delusive impressions. They will be found entirely divested of the slightest evidence of

oxidation, possessing in a marked degree the well-defined physical and sensible characteristics of the respective drugs from which they are derived, such as odor, taste and color, and embodying and retaining in a concentrated condition and in their natural organic combinations all the original, proximate principles of the drug. This remarkable transition has been effected entirely through the introduction and perfection of an improved system of vacuum distillation, enabling a skillful operator to concentrate the various percolates to complete dryness, protected during very stage of the operation from the oxidizing influence of the air."

The preparation of powdered extracts by the vacuum process is described as follows. "The vacuum pan or still, which is designed for this purpose, is constructed in such a manner that a practically perfect vacuum, at a temperature not exceeding 120° F., is maintained until every trace of moisture has been eliminated and a perfectly dry, brittle mass remains. At this stage the extractive matter, as it is removed from the pan, presents a variety of interesting conditions in marked contrast to the charred masses resulting from open evaporation. The odor of the drug is strongly predominant, the fracture glistening and resinous in character, more or less transparent in thin layers, and in every case, so far as the writer's observations have extended, perfectly soluble in the original menstruum employed, indicating undoubtedly the unaltered condition of the proximate principles. After a careful determination of the actual weight of the dry extractive, sufficient diluent, in the nature of milk sugar or powdered drug, is added to bring the final product to a definite and unvarying relation to the drug, corresponding approximately to the pilular extract, and, after thorough incorporation, reduced to a uniform powder. To insure an almost inpalpable degree of fineness, as well as the utmost permanency for this class of preparations, it is imperative that every vestige of moisture should be dissipated, and the mass as it is discharged from the pan should be in condition to be speedily powdered."

"If there should remain in the charge the slightest trace of moisture, it would occasion in time a tendency to what is commercially known as 'cake,' a soft, pasty condition, which it assumes preparatory to reverting to the original, solid state. It is an established fact and one universally recognized by pharmacists that powdered extracts possess an inherent affinity for moisture; the hygroscopic nature of many is such that they can only be employed with perfect freedom in exceedingly dry weather, and if, as is frequently the case, it should become necessary to manipulate the extracts in a moist, humid atmosphere, the operation should be conducted with the utmost dispatch, and the exposure be as limited as possible. The absorption of moisture is frequently not observable at first, but shortly becomes manifest in the sinking of the powder, which eventually resolves itself into an intractable mass." [Alumni Report, 36, p. 3.] *W. O. R.*

## New Remedies.

**Fluoroform,** analogous to chloroform in composition $CHFl_3$ is a gas soluble in water (2.8 p. c.). It is practically odorless and tasteless. It is administered internally in the aqueous solution for pulmonary troubles in teaspoon to tablespoonful doses, four to five times per day.

[Schw. Wchschr. f. Ch. & Ph. 38, p. 42.] *W. O. R.*

**Aspyrin** is acetylsalicylic acid, white crystals soluble in water (1 p. c.) and readily soluble in alcohol and ether. It is not affected by acid solutions, but is decomposed by alkaline substances. When administered internally, decomposition does not result until it reaches the intestines. Therapeutically its action is similar to that of sodium salicylate without however the undesirable side reactions of the latter. It is given in 3 to 5 gm. doses daily.

[Schw. Wchschr. f. Ch. & Ph., 38, p. 42.] *W. O. R.*

**Piperidine Bitartrate** dissolves uric acid in a manner similar to lysidine, piperidine and hexamethylenetetramine. The presence of the tartaric acid radical increases the solvent properties of piperidine. The compound is crystalline and readily soluble in water, and has an agreeable taste.

[Schw. Wchschrft. f. Ph. & Ch., 38, p. 24.] *W. O. R.*

**Ozalin Water** is a solution of magnesium peroxide in carbonic acid water.

[Pharm. Zeitg., 45, p. 37.] *W. O. R.*

**Veloril** is a new substitute for caoutchouc and guttapercha, which may be used under any condition that the others are used. It is a mixture of nitrocellulose (nitrated but slightly) and nitroricinoleïn, and forms a smooth homogeneous mass.

[Brit. & Col. Drug.; through Pharm. Zeitg., 45, p. 37.] *W. O. R.*

**Carboformal Briquettes** serve as convenient generators of formaldehyde by impregnating charcoal in cubes with solid paraformaldehyde, which when heated without ignition, enough heat is developed to convert the paraformaldehyde to formaldehyde.

[Hygen. Rundsch.; through Pharm. Zeitg., 45, p. 65.] *W. O. R.*

**On the Use of "Wood Pulp" Sheets as a Substitute for Flax Seed Meal and other Substances in Poultices; also a few other Uses for the Material.—** F. P. Gordon describes the use of wood pulp for medicinal purposes. The points in favor of its use are: general availability, cleanliness, rapidity of preparation and varied uses. Information regarding the source and cost of wood pulp can be had through any dealer in paper. The crude or unbleached wood pulp in loose sheets is to be preferred, as the "sulphite pulp" may contain traces of the bleaching agents. To prepare a sheet of wood pulp, it is softened in water, then the water lightly squeezed and immersed in hot water, wring lightly again and apply, protecting it from loss of heat and

moisture with a piece of oiled muslin. The same sheet may be used repeatedly.

Other uses to which wood pulp are, the application of antiseptic dressing (none of the generally used antiseptics are incompatible with wood pulp, as it is chiefly cellulose); charcoal dressing (by charring one side of the sheet); application of medicinal substances in the form of ointments; plain sterilized dressing or absorbent; splints; plaster of Paris bandages; and ice caps. [Am. Jour. Pharm., 71, p. 525.] *W. O. R.*

**Ibit** is a preparation analogous to airol, bismuth iododogallate, and is oxy-bismuth-iodo-tannate, its name being derived from the initial letters of **I**odine, **B**ismuth and **T**annin. It is a grayish-green, odorless and tasteless, fine impalpable powder, thus readily lending itself for dusting purposes. It is intended as an iodoform substitute. It is fairly stable towards light, but decomposes slightly in direct sunlight. It decomposes in the presence of water (even damp air) and animal tissues, liberating simpler iodine compounds, especially when warmed. It is insoluble in the ordinary solvents. Dilute acids and solutions of soda dissolve it. Ointments with lard or vaseline are stable, as are also emulsions with glycerin and water. Oxidizing agents and concentrated acids liberate iodine. Ibit also possesses bactericidal properties. Ibit gauze is being placed on the market in addition to the powder.

[Schweiz. Aerzte, 1900; through Pharm. Centrlhl., 41, p. 65.] *W. O. R.*

**Crystallin** is a collodion prepared from pyroxylon, 5 gm., methyl alcohol, 20 gm., and amyl acetate, 20 gm. Its advantages over ordinary collodion are said to be slower evaporation, and softer film left after evaporation.

[Pharm. Post, 33, p. 66.] *W. O. R.*

**Antiethylin** is a serum for the treatment of alcoholism. It is prepared by obtaining the serum of blood of a horse which has been taught to indulge in alcoholic beverages. This serum when injected into other animals also addicted to the same habit, they were soon found to go without food and drink if they contained alcohol. This remedy is a product of the Paris Academy of Medicine.

[Rep. de Pharm., 1900, p. 34; through Ztschr. d. a. ö. Apoth. Ver., 54, p. 98.] *W. O. R.*

**Cascarin** is claimed by its discoverer Leprince (1892) and others to be the active principle of cascara sagrada. It is supposed to be a definite chemical compound. It possesses decided, but slow laxative properties even in small doses, without any of the undesirable side effects of the various preparations of the bark. Laffend states that it acts primarily as a cholagogue and secondarily as a laxative. It is best administered in pill or elixir form in doses of 0.1—0.3 gm. (1.5—4.5 gr.).

[Gaz. des Hopit., 1899, p. 1296; through Pharm. Ztg., 45, p. 134.] *W. O. R.*

**Dioeat** is a German liquid preparation, rather complex in its nature, as it is prepared from 10 different drugs and chemicals. It is claimed to be beneficial in diabetis. It should not be confused with

**Dioeatin,** a jambul preparation, possessing practically the same therapeutic properties. Further details regarding the constituents, method of preparation, cost, etc., of the former compound are given on p. 172 of the Ph. Ztg. [Pharm. Ztg., 45, p. 134.] *W. O. R.*

**Epicarin** is a condensation product of kresotinic acid and beta-naphthol. It is prepared in two forms, one for human (*purum*) and the other for veterinary (*veterinarium*) purposes. It is a reddish-yellow powder, having an acetic acid odor, and is readily soluble in alcohol, ether, paraffin oils and alkalies. In the latter readily soluble neutral salts are formed. Chemically it is beta-oxy-naphthyl-oxy-meta-toluylic acid, $COOH.C_6H_4.OH.CH_2.C_{10}H_6OH$. Therapeutically it possesses the properties of a non-poisonous naphthol preparation and is employed in various skin diseases in 10 p. c. soda or 10—15 p. c. alcoholic or 10—20 p. c. liquid petrolatum solutions. The sodium salt of epicarin is also employed in a similar manner.
[Wien. med. Wchschr., 1900; through Pharm. Centrlhl., 41, p. 87.] *W. O. R.*

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## Pharmacology and Therapeutics.

**The Present Status of Antiseptics in Surgery.***—It is now about twenty years since the general adoption of the antiseptic treatment of wounds in the United States; although some few surgeons had employed such treatment before, it was only at this period that the principle of antisepsis, as a doctrine in prophylactic therapy, was generally recognized.

Ample time has elapsed to permit us to pronounce on the soundness of the new system, its scientific foundation, and its claims, as a means of preventing infection, inflammation, suppuration, or gangrene, in wounds produced by accident or deliberately by the surgeon.

When first introduced, antiseptic remedies were hailed with enthusiasm by the greater part of the profession, although there were some few who stubbornly denied their efficacy, and others who only employed them in a perfunctory manner, rather to escape criticism than because they had any abiding faith in them. Against these were arranged the uncompromising extremists, who regarded every description of wound as germ-infected, to be only purified by strong antiseptic solutions. The healthiest wound was douched and flushed, streams played from irrigating jars over the parts as they were divided under the scalpel, and every wound was canalized by multiple tubes of rubber or glass. "We must 'drain' everything."

It was not long before it was found that antiseptic solutions in sufficient strength to destroy every description of germ were fatally destructive to the cellular elements of a part; moreover, they were capable of systematic

* A review by Dr. Chas. H. Manley, Professor of Surgery in the New York School of Clinical Medicine.

resorption and of producing toxic conditions. It was, furthermore, learned that many varieties of bacteria are comparatively innocuous in healthy wounds; and along with this, it appeared that the blood plasma and the leucocytes possess active germicidal properties.

Clinical observations daily convince us that the healthy tissues digest with perfect impunity microbes or bacteria of every description, and though theoretically desirable, we have no proof that complete destruction of all germ invasion of a fresh wound is possible, without impairing or destroying the vitality of the cellular tissue. More than this, we know that there are certain tissues intolerant of any chemical solution of antiseptic strength. This is notably obvious with those parts lined by endothelia and the nude bone surfaces.

Had antiseptics fulfilled what was at first promised, the scope of surgical intervention would be unlimited, as the operator, no longer restrained by fear of any other accident or sequel than hemorrhages, would have a boundless field before him. Experience, however, has demonstrated that there are certain limits, beyond which antiseptics give no security.

In all fresh wounds, not the seat of suppurative changes, it was soon learned that some of the fundamental essentials of antiseptic technique might be dispensed with—that the spray was needless, free irrigation unnecessary, and indiscriminate drainage worse than useless.

It having been demonstrated, after a time, that antiseptic solutions had but a limited application in recent wounds produced by accident or art, and yet appreciating the fundamental principle of such solutions, as annunciated by their celebrated discoverer, viz.: "to exclude pathogenic germs from the site of operation," the word "asepsis" was coined. It may be accepted as defining a condition as well as any other word that could be invented, though it is inaccurate and misleading. The term implies a sterile operation, one in which germ action is wholly excluded, which is something beyond the range of possibility. Let the dressings be ever so baked and boiled, and the operator gloved, hooded, and masked, the atmosphere will defy him Besides, repeated experiments have proved beyond question that perfect sterilization of the healthy integument is impracticable. The lengths to which some have gone in the aseptic side of surgery borders on the ridiculous. In suppurative cases, asepsis is an absurdity, and in every instance it is abortive without antisepsis.

Asepsis, strictly speaking, is but another term for modified antisepsis.

Lord Lister, in the beginning, claimed for antiseptics that they "excluded fermentation in open wounds," or, we might translate his phrase to mean, in modern terms, that "the aim was to destroy the pabulum on which pathogenic germs multiply"—something quite impossible without the aid of chemicals. His purpose was, first, to cleanse the parts, and, second, to preserve them uncontaminated.

What is practiced to-day, and what seems to have come to stay, is modified antisepsis. In the practice of asepsis, antiseptic agents occupy a prominent place, though with distinct limitations. They must be employed in cleansing everything—soap taking the first place, among what Dr. I. E. Bonfleuer, of Chicago, would class as the "innocuous" antiseptics. The surgeon's hands, the integuments of the patient, the instruments are saturated with them, and the gauze dressings must freely imbibe them.

Antiseptics are not now employed during the operation. They are rigidly restricted, in non-infected cases, to before and after the operation; hence, the intermediate or operative stage only is, properly speaking, the aseptic. Careful preparation in every detail, in the way of radical and complete antiseptic cleansing of everything, constitutes the most essential step in preventing wound infection. After operating and closing the wound, proper antiseptic coverings will render no more dressings necessary, in flesh wounds, until healing is complete. This feature of immediate healing of a large breach in the tissues evidently curtails the labors of the surgeon. The full efficacy of antiseptic agents is best realized when we have to deal directly with parts already the seat of inflammatory action. Here they act directly on pathogenic cocci or bacilli, or, what is more probable, not infrequently this action is only inhibitory.

An objection has been made to nearly all chemical solutions, that when they are injected directly into the nude tissues they are largely rendered inert by producing coagulation and forming albuminates. On suppurating surfaces, on the lining of pyogenic membranes, and along purulent tracts, this is precisely what we seek to accomplish with those valuable antiseptics of pronounced styptic properties, such as hydrogen peroxide, alcohol, the solutions of carbolic acid, and the silver salts.

In infected cases, in order to realize proper results, the drain must come into requisition, to carry away any residue of infected or necrotic elements remaining, and antiseptics must be employed during, as well as before and after, operation.

The dry treatment of wounds marks a notable and substantial advance in operative surgery. Operators now seek to render their work as dry as possible through every stage of the operation. With carefully prepared swabbing materials and dressings, in a large range of cases, it constitutes the ideal technique.

This dry embalming of the tissues involves a modification of the antiseptic technique. Everything is desiccated. Hemostasis must be as complete as possible: the wound is made dry, the gauze-dressings charged with antiseptic substances have their aqueous element abstracted in a large degree, and antiseptic agents employed are reduced to dry powder and dusted over the parts.

In many open fractures or mutilations of the soft parts, this dry embalming with antiseptic materials, when infection is suspected, may be used with good results.

Iodoform is still preferred as the most effective dusting powder, although it is only indirectly an antiseptic, and, moreover, is prone to toxic absorption. The later mode of treating wounds has brought forth several new antiseptic powder preparations, which, no doubt, will largely displace irrigating solutions. Their great advantages are that they may be preserved indefinitely, are in a concentrated form, are small in bulk, and require no elaborate apparatus for their employment.

It will be noted from time to time that there are surface lesions of the cuticle, subcutaneous tissues, or mucous membranes, that instead of promptly healing under local dressings, suppurate or ulcerate indefinitely. For example, we operate for a necrotic appendix, but the wound keeps on discharging and shows no signs of closing. The patient has pyrexia of an intermittent character. Quinine and arsenic are then freely administered, thus attacking the plasmodium in the circulation. The fever will then likely diminish, to be succeeded by the healing of the painful, open sinus in the abdomen.

Wounds in the syphilitic, rebellious to local treatment, often yield kindly to internal administration of specifics. Gonorrheal arthritis, of such intensity as to drive the patient to despair, is decidedly influenced by the iodides and mercury.

Long before antiseptics were heard of, mercury was well known as a sovereign remedy in various types of inflammation. Its employment was then empirical; now, it is based on scientific principles. But we make a mistake when we restrict its use to the incised parts, in inflammatory conditions. In various types of appendicitis, whether there be a tumor or not, free mercurial inunction over the site of the appendix will often thoroughly and quickly remedy the trouble.

Antiseptics in the cavities of the stomach, the rectum, or vagina, are of incalculable value. Of course, they are comparatively inert and worthless unless preceded by a thorough cleansing process.

It is almost inconceivable how foul and fetid the stomach may become, through masses of decomposed ingesta besmearing its wall, in cases of gastric inertia, or organic disease; it is also amazing to note the extent of relief following a thorough washing out with soapsuds and the use of Türck's gyromele, to be followed by a liberal flushing with some of the milder antiseptic solutions.

In diseases of the vagina or the rectum, as those organs may be, in all their parts, exposed, thorough cleansing and direct antiseptic applications will generally cut short non-malignant, infected conditions.

[Merck's Archives, 2, p. 86.]

# Literary.

## Books and Pamphlets Received.

P. Blakiston's Son & Co.—Philadelphia. Victor von Richter's Organic Chemistry or Chemistry of the carbon compounds. Edited by Professor R. Anschütz of the University of Bonn. Authorized translation by Edgar F. Smith, Professor of Chemistry, University of Pennsylvania. Third American from the eighth German edition. Vol. II: carbocyclic and heterocyclic series, pp. 671. 1900. $3.00.

—— A Pocket Medical Dictionary giving the pronunciation and definition of the principal words used in medicine and the collateral sciences. By G. M. Gould. Fourth edition revised and enlarged, 30,000 words, pp. 837. 1900.

Verlag von Wilhelm Engelmann—Leipzig. Die Rohstoffe des Pflanzenreiches. Versuch einer technischen Rohlehre des Pflanzenreiches. Von Dr. Julius Wiesner, Professor der Anatomie und Physiologie der Pflanzen an der Wiener Universität. Zweite gänzlich umgearbeitete und erweiterte Auflage. 1900.

Verlag von A. Hartleben—Wien. Pharmaceutisches Lexicon. Ein Hilfs- und Nachschlagebuch für Apotheker, Aerzte, Chemiker und Naturkenner. Von Dr. Max von Waldheim. 1900.

Verlag von Julius Springer—Berlin. Die medicinischen Verbandmaterialien mit besonderer Berücksichtigung ihrer Gewinnung, Fabrikation, Untersuchung und Werthbestimmung, sowie ihrer Aufbewahrung und Verpackung. Von P. Zelis, Apotheker und Verbandstoff-Fabrikant. Ein Band, 268 Seiten, mit Textabbildungen. 1900.

Field Columbian Museum—Chicago. Annual report of the Director to the board of trustees for the year 1898—99. Publication No. 42, Vol. 1, No. 5. October, 1899.

Author—Madison, Wis. 1) The relation of the taste of acid salts to their degree of dissociation, by Louis Kahlenberg. Pamphlet, pp. 5. Reprinted from the Journal of Physical Chemistry, Vol. 4. 1900. 2) Note on the preparation of metallic lithium, by Louis Kahlenberg. Pamphlet, pp. 2. Reprinted from the Journal of Physical Chemistry, Vol. 3. 1900.

U. S. Department of Agriculture—Washington. Russian Cereals adapted for cultivation in the United States, by M. A. Carleton. Pamphlet, pp. 42. 1900.

Agr. Expt. Station*—Madison, Wis. Bulletin No. 79: Principles of construction and maintenance of country roads. Pamphlet, pp. 48.

Bulletin No. 80: The character and treatment of swamp or humus soil. Pamphlet, pp. 39.

## Reviews.

Die medicinischen Verbandmaterialien mit besonderer Berücksichtigung ihrer Gewinnung, Fabrikation, Untersuchung und Werthbestimmung, sowie ihrer Aufbewahrung und Verpackung. Von P. Zelis, Apotheker und Verbandstoff-Fabrikant. Ein Band, 268 Seiten, mit Textabbildungen. Verlag von Julius Springer, Berlin. 1900.

This elaborate work treating of the manufacture, the examination, the packing and storage of the entire series of surgical dressings of all kinds is somewhat of a novelty in pharmaceutical literature and is a most interesting and instructive essay on a subject matter not yet deservedly appreciated in pharmaceutical circles. The book is thoroughly elaborated by a competent and experienced expert and is of equal interest and practical value from a professional as well as commercial point of view. A brief enumeration of the main chapters will best indicate the scope of the work.

Part 1. Material used for surgical dressings: cotton, wood, wool, silk, ramie, jute, silk, linen, moss, turf, sponge, glass-wool, charcoal, asbest, pengha-war-djambi, india rubber, gutta percha, catgut.

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* The bulletins and annual reports of this station are sent free to all residents of Wisconsin upon request.

Part 2. Antiseptic and medicated material; its preparation; chemicals used; preparation.

Part 3. Aseptic and sterilized dressings; bacteria and their destruction.

Part 4. Non-antiseptic dressings.

Part 5. Miscellaneous articles used in surgery.

Packing of surgical dressings.

The book will be of interest and perhaps of some usefulness to American manufacturers, but is certainly of paramount interest and value to physicians, pharmacists and druggists. *Fr. H.*

DIE ROHSTOFFE DES PFLANZENREICHES. Versuch einer technischen Rohstofflehre des Pflanzenreiches. Von Dr. Julius Wiesner, Professor der Anatomie und Physiologie der Pflanzen an der Wiener Universität. Zweite gänzlich umgearbeitete und erweiterte Auflage. Verlag von Wilhelm Engelmann, Leipzig. 1900.

A few years after the publication of Prof. Flückiger's Handbook of Pharmacognosy and almost simultaneously with Flückiger and Hanbury's Pharmacographia, Prof. Wiesner issued his well known work Die Rohstoffe des Pflanzenreiches. In pharmaceutical circles the former two works have tended to overshadow the latter one in consequence of their more special application to the requirements and interests of the pharmacist and druggist, while Prof. Wiesner's work treats more generally of the plant drugs used in the arts and trades and embraces a broader scope of the anatomical structure and the physiological and chemical aspects of these drugs. The elaborate book has well served its purpose for many years. The great advance of the pertinent sciences during these years have induced the author and publisher to issue a new entirely rewritten and much enlarged edition of the work, to be published in ten fascicles within the present year. For the elaboration of the new edition Professor Wiesner has secured the co-operation of a number of well known specialists, among them Professors M. Bamberger, W. Figdor, F. von Höhnel, T. F. Hanausek, F. Krasser, Lafar, A. von Vogl, K. Wilhelm and S. Zeisel of Vienna, and Professors H. Molisch of Prague and K. Mikosch of Brünn. The work will be richly illustrated and will abound in references to original sources.

The first fascicle just issued and containing the introduction, the gums and resins speaks well for the new edition, which will meet with

due consideration and the appreciation of all interested in the study and application of drugs used in pharmacy, arts and industries.

*Fr. H.*

VICTOR VON RICHTER'S ORGANIC CHEMISTRY or Chemistry of the carbon compounds. Edited by Professor R. Anschütz of the University of Bonn. Authorized translation by Edgar F. Smith, Professor of Chemistry, University of Pennsylvania. Third American from the eight German edition. Vol. II: carbocyclic and heterocyclic series, pp. 671. P. Blakiston's Son & Co., Philadelphia. 1900. $3.00.

The first volume of this new edition appeared about a year ago and was reviewed in the June number of this journal. In addition to having had the use of the first part for almost a twelve month, the size of the second part with almost seven hundred pages puts beyond question the advisability of a division. The statement by the translator that his work extended over a period of three years coupled with a reference to the total number of pages, viz. 1296, and a glance at the compactness of the typography will give a fair estimate of the amount of material compressed within the covers of these two volumes. The work thus maintains its reputation of being a "Beilstein" on a small scale.

In the introductory chapter on carbocyclic compounds some good principles of classification are laid down only, however, to be overthrown by the following statement: "However, in order to fully comprehend the hydroaromatic bodies, it is essential to know the aromatic compounds." If the hydroaromatic compounds had been known before the aromatic compounds were so largely developed, no one would think of making such an argument. This principle is violated again and again in this book as well as in all treatises of organic chemistry that are not of the most elementary order. The grip which tradition has on writers of text and reference books is in this instance shown strikingly in the chapter on terpenes. It not only includes chain compounds belonging in volume one, but heterocyclic compounds as well as homocyclic. It is a treatise within a treatise, the smaller being fairly independent of the larger.

It is no doubt unavoidable that a treatise of this kind should suffer from one of the sins characteristic of the modern chemical world. The translator can certainly not be held responsible for the arrange-

ment of the work. Yet attention cannot be called too often to this defect wherever it occurs. Let us hope that a second "Geneva Congress" may lead us a step farther out of the wilderness in a not distant future.

Inasmuch as the work of Meyer and Jacobsen is evidently not to be completed and, therefore, not likely to be translated into English, the completion of this translation of Richter's standard treatise will undoubtedly be welcomed by all who do not read German or at least prefer the English to the German. In taking upon himself the arduous work of translating a treatise so full of detail, Professor Smith has earned the gratitude of all American chemical students. The two volumes will constitute a valuable if not an indispensable addition to every chemical library. *E. K.*

PHARMACEUTISCHES LEXICON. Ein Hilfs- und Nachschlagebuch für Apotheker, Aerzte, Chemiker und Naturkenner. Von Dr. Max von Waldheim. Verlag von A. Hartleben in Wien. 1900.

This encyclopedia of pharmacy has been promptly issued within the time stipulated. On less than 1000 pages it contains all information requisite in the practice of the pharmacist, chemist, druggist and manufacturer. Comprehensive in the subject-matter treated, concise in style and of a comparatively low price, the volume will prove of practical value as a ready, reliable and replete reference work to the cognate professions and should find a place in college and private libraries. *Fr. H.*

# SUPPLEMENT.

## Scientific Organizations.

**Pure Food and Drug Congress.***— The National Pure Food and Drug Congress was well attended, about 280 delegates being present. The committee on resolutions recommended the following amendments relating to drugs in the Brosius bill now before Congress, which were adopted:

The word "cosmetics" was omitted after some discussion, as it was deemed that these articles should be treated similarly to proprietary medicines, — i. e., exempted.

For more valid reasons, perhaps, those portions recognizing the National Formulary were eradicated, owing to the non-official character of this work.

Instead of covering all medicines for internal or external use, using the U. S. Pharmacopoeia as a standard, as originally intended, the bill as it now stands is restricted so that only pharmacopoeial preparations are included under the definition of "drug." It would seem that the medicines least needing supervision are the only ones to be included in the Brosius bill.

There was evidently a marked divergence as to at least three points embodied in the Brosius bill. The first difference was as to the appointment of the head of the department. The Brosius bill delegated the work to the chemist in charge of the Division of Chemistry of the Department of Agriculture. It was contended that the head of this work should be conversant with the existing trade conditions and should be appointed by the President of the United States and, further, that all the work of enforcing these laws, executive, legal and chemical, should be wholly under his control and supervision. This provision was embodied in the first section of the Babcock bill now before Congress.

Second, exception was taken to the provision of the Brosius bill exempting dealers proving a written guarantee of purity. Courts have repeatedly held merchants liable for the character of the goods they handle under the common law. It has been found almost impossible to fix the responsibility for adulteration upon an individual where original packages are handled by common carriers and others in unsealed packages and after such goods had been exposed for varying lengths of time to possible tampering. For this reason the laws now in operation in states enforcing similar food legislation hold the seller liable, and he is enabled to protect himself by guarantee from reputable firms (whom this law would protect), and to recover damages by civil action if deceived. That this does not cause serious hardship to the merchant may be shown by the results in these states.

Again, there was doubt as to the desirability of "standards," largely from a legal standpoint. This feeling

* The above account of matters of special pharmaceutical interest that came up at the recent session of this Congress was kindly rendered by Professor A. S. Mitchell, Chemist of the Wisconsin Food and Dairy Commission, who was in attendance.

was shown in the elimination of the words "National Formulary."

It is questionable whether a law making body can delegate powers peculiarly its own and anticipating the action of associations or bodies "official" or otherwise, many holding that such standards must stand or fail in court upon their own merits as evidence only at the most, and the belief is that the introduction of such standards may prove a source of weakness in the law.

Upon these three points the representatives of the dairy and food commissions of the several states were wholly in accord, and their opinions, based upon practical experience, cannot but carry weight.

These views were opposed by the members of the Official Association of Agricultural Chemists who were numerically much in evidence, and the changes referred to were not adopted.

It was deeply to be regretted that the druggists were not better represented by such careful students of the subject of drug adulteration, as the older members of the A. Ph. A. and the heads of the various colleges of pharmacy. As it was, Mr. N. M. Kline of Philadelphia was forced to act as sponsor for the drug interests.

President Blackburn of Ohio and the other officers were unanimously re-elected, thus rewarding faithful service.

While there was some conflict as to the details, there was entire harmony as to the need of such legislation, and the Congress of the United States is undoubtedly amply able to cope with details as to methods of enforcement, so that on the whole the results of the meeting were wholesome and effective.

Proceedings Received:—

Illinois: Report of Proceedings of the Illinois Pharmaceutical Association, at its twentieth annual meeting held at Danville, June 7 and 8, 1899. pp. 160.

Kansas: Proceedings of the twentieth annual session of the Kansas Pharmaceutical Association, held at Lawrence, May 23 and 24, 1899. pp. 80.

Ohio: Proceedings of the Ohio State Pharmaceutical Association. Twenty-first annual meeting, held at Put-in-Bay, June 22, 23 and 24, 1899.

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## Bibliography.

Progress in Pharmacy and Therapeutics is the title of a valuable brochure issued by Lehn & Fink of New York. Although of modest size the book presents a fund of interesting matter of distinct value to the professional pharmacist whose limited time does not permit of exhaustive research, yet whose calling requires a practical knowledge of such of the newer remedies as have met with favor with the medical profession. To this initial volume the publishers purpose to add another as often as accumulated material shall warrant.

"The New Idea" published by Frederick Stearns & Co. of Detroit has come out in a new garb in celebration of its twenty-first anniversary as well as of the removal of the offices and laboratories from their old quarters to the new and elegant home on Jefferson Ave.

Hermann Peters, the well-known author of "Aus pharmaceutischer Vorzeit in Wort und Bild," has just

completed a new historical work Der Arzt und die Heilkunst in der deutschen Vergangenheit. This book constitutes volume III of "Monographien zur deutschen Kulturgeschichte" published by Eugen Diederichs of Leipzig.

The treatise is not of an ordinary history of medicine, but describes the life of physician and pharmacist with the development of medical science. It is richly illustrated with many rare cuts of works of the fifteenth to the eighteenth centuries.

CATALOGUES RECEIVED:—

Martin Boas—Berlin. Medicinischer Anzeiger. No. 3, 1900.

F. A. Brockhaus—Leipzig. Monthly list of new books. February 1900.

A. S. Clark—New York. Catalogue of books and pamphlets. No. 48 and 49, 1899.

Charles Scribner's Sons—New York. Descriptive catalogue and announcements of text-books. 1899.

U. S. Dept. of Agr.—Washington. Monthly list of publications. February 1900.

Friedr. Vieweg & Sohn—Braunschweig. Verzeichniss neuerer Werke, Publikationen bis October 1899.

## Professional.*

**Quack-medicine Advertisements.**—Councillor Pollard, convener of the Public Health Committee of Edinburgh Town Council, presiding at the annual meeting of subscribers to the Edinburg Dispensary for Skin-diseases, in the Royal Hotel, Edinburgh, on January 18, said there were advertised daily in the most unlikely places nostrums for the cure of skin and other diseases. It had always seemed to him that there were few more discreditable instances of man's inhumanity to man than the professions made by venders of various kinds of medicines so-called to heal troubles which they could not possibly alleviate in the least degree. Quack medicines were offered broadcast over the country. Poor people were not merely swindled by them, but in many instances after using these so-called remedies, patients were brought to a worse condition than before, and sometimes even their lives were endangered. So-called religious papers and papers which professed to exist for the purpose of promoting the social well-being of the people he found to be serious offenders by the publicity they gave to quack medicines. Some of the medicines offered as priceless were absolutely worthless and worse than worthless. Pills had been found to be made of ginger, soap, and aloes of the coarsest description. The ginger and aloes were held together by the worst of soap, and out of that concoction was made a box of pills which were said to be a cure for almost every malady that afflicted the human being. It was said that some papers could not live without advertisements of this description, but such papers ought rather to refuse to exist than to be the means of not only imposing on people, but helping others to make homicides of themselves. Mr. J. B. Sutherland S. S. C., endorsed the Chairman's remarks, and the Rev. A. B. Morris said they were not nearly so bad in Edinburgh in regard to the publication of these advertisements as in the large manufacturing towns of England.

**Japanese Patent Medicines.**—Japan has now a patent medicine law. The

* Clippings on secret remedies from European journals.

seller of a patent medicine is required to send in a detailed account of the use, dose, and contents of each patent medicine he sells, for which he pays 20 yen and an additional 2 yen yearly for each single one. The medicines may not contain any poisons. The permission may be withdrawn if the maker should alter the composition, or if it is proved that the contents are injurious to health. Altering the composition is punished with confiscation and 20 to 50 yen fine, forging the permission 50 to 100 yen, and secretly adding poisons means a fine of 100 to 500 yen. The informer gets half the fine.

**New German Patent Medicine Law.**—The following is a résumé of the law now before the German Federal Council for sanction, regulating the sale of patent and secret medicines. These are not (1) substances and preparations contained in and sold under the names given in the German Pharmacopoeia; (2) substances recognized by medical science and practice as effecting cures; (3) all substances stated to be disinfectants, perfumes, foods and condiments and all strengthening preparations. The public advertising of secret medicines is prohibited; the bottles or receptacles containing the substance and covers must distinctly show the name of the article, and that of the maker with his address, as well as that of the firm which sells it and the price. It is prohibited to put on the bottles (or to wrap them in papers setting forth) recommendations, certificates, or any mention of cases in which the medicine effects a cure, or has a preventive effect. Any secret medicine which the apothecary is doubtful about being safe to sell may only be given on a doctor's prescription, and in such case the bottle must bear the words "may only be given on a prescription." Secret medicines which are injurious to health, or by means of which swindling is evident, are not allowed. Those considered as such will be named by the respective governments of each German State.

**"Secret Remedies"** was the text of a paper recently read by Professor Bourqnelot at the meeting of the Paris Academy of Medicine. The subject was treated in an amusing and interesting manner, the author remarking that in spite of the well-known severity of the Academy, inventors were by no means discouraged, and he described a number of the preparations sold, out of the multitude of which the Academy has only been able to give its approval to one or two.

A proposal by M. Denize that the question of "pharmaceutical specialties from the international point of view" should be discussed by the Congress, has been rejected on the ground that by reason of the difference in the laws regulating patent medicines in various countries it would be impossible for the delegates to come to any understanding on the subject.

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## Commercial.

PAMPHLETS RECEIVED:—

Lehn & Fink—New York. Progress in pharmacy and therapeutics. Pamphlet pp. 106. Reported in Notes on New Remedies from Sept. 1898 to Dec. 1899. Price fifty cents.

Heinrich Haensel—Pirna a. d. Elbe. 1. Berichte von H. Haensel, Fabrik aetherischer Oele und Essenzen. pp. 119. 1899. 2. Reports on Essential oils and essences. pp. 96. 1899.

# Pharmaceutical Review.

VOLUME 18. MAY, 1900. NUMBER 5.

## Editorial.

On another page our readers will find a draft for a model pharmacy law drawn up by Professor Beal, together with an exposition of the underlying principles offered by way of introduction. The Review has no desire to anticipate the possible discussion that will follow when this draft comes up for consideration at the Richmond meeting of the American Pharmaceutical Association next week. It is fortunate, indeed, that after several years of talking something tangible is to come up for discussion at last. Though possessing elements of progress, the model law of Prof. Beal is decidedly conservative and therefore ought to insure a reasonable amount of success in actual practice. It is to be hoped that, after the American Pharmaceutical Association has approved of this model with such modifications as it may seem best to make to the majority of its members at Richmond, the various state associations will take up this question with a little more zest and enthusiasm than they did several years ago, when they were approached on the subject. The good that is to come out of this or any other model law approved by our national association will lie in the stimulus and direction it gives to movements of legislative reform in the various states. If this law meets with similar success to that of the first model drafted in 1869, the Richmond meeting will become one of the conspicuous landmarks in the history of our association.

In the supplement will be found a call by the Secretary of the Maryland College of Pharmacy for delegates to an Association of Colleges and Schools of Pharmacy to be organized at Richmond at the time of meeting of the American Pharmaceutical Association. If the planned association realizes, it is hoped that its organization will be effected on broad lines so as to give to it elements of success. While we should gladly welcome a closer union of the heterogeneous colleges and schools scattered over an enormous territory and trying to meet a variety of wants, we hope that no attempt will be made to make all pharmaceutical educational institutions alike. Such an attempt must inevitably fail and may prevent the great good such an organization might accomplish in other directions.

Another idea, if a serious attempt to enforce it is made, will prove fatal to the greatest good of such an organization, viz. that the institutions represented will bind themselves in advance to the actions of such an organization. Whatever the independent institutions controlled by boards of trustees consisting of druggists may chose to do, this requirement would quite effectively exclude the schools of pharmacy which are integral parts of state universities. The constitutional government of the latter is such as to make prohibitive such submission.

Furthermore, undue haste seems no more desirable than it would be effective. If proper organization is brought about at Richmond, that ought to be enough. The question of representation in such a body is a matter of great moment. If the resolutions and recommendations of such an organization are to have any influence and weight, they must be truly representative and not represent factional interests. After proper organization has been secured, one or several of the most pressing problems might be proposed for consideration, several papers representing the different points of view should be carefully prepared at least several months in advance of the next meeting. The various colleges and schools might then intelligently discuss the matter and take such position as they saw fit. Being thus prepared, their delegates could then speak not only intelligently for themselves, but would indeed represent their institutions. A broader discussion and wisely drawn resolutions ought then to react beneficially on the institutions represented. It must be a matter of satisfaction to many that the initiative has at least been taken.

# A General Form of Pharmacy Law Suitable for Enactment by the Several States of the United States.

By *J. H. Beal.*

**The Old Model.** At the annual meeting of the American Pharmaceutical Association in 1869 a committee consisting of Messrs. Wright, Milhau, Moore, Stearns and Maisch presented a draft of a general form of pharmacy law which, after extended discussion, was accorded a place in the proceedings of the Association as representing the general principles which, it was hoped, would be followed in case the several states should attempt legislation regulating the practice of pharmacy.

Prior to the appearance of the 1869 model, only two pharmacy statutes were in existence in the United States, both of which were very imperfect and of limited application. Since then nearly every political division of the United States has provided itself with a pharmacy law, the general plan of all being, in the main, similar to that of the model above referred to, though the different conditions existing in the various states have served to produce a very great variety in detail. Many new features not present in the old model have been developed, some have been greatly modified by the different hands through which they have passed, while others of the ideas originally advanced have proved to be impracticable, and have been abandoned.

This multiplicity of details in the several states and the unsatisfactory character of many of the statutes early produced a desire for a general revision, and, if possible, the creation of a substantial uniformity among the several enactments. Naturally the most convenient arena for the exploitation of this idea has been the annual meetings of the society which produced the original model, and for a decade past the subject has received especial attention at the hands of nearly every president of the Association, by the various chairmen of the Section on Education and Legislation, in many papers presented by many members of this association, and by practically all of the pharmaceutical journals.

At the Montreal meeting of this association in August 1896 the writer presented a comparative exhibit of the pharmacy laws then in force in the United States, and offered a resolution providing for the

appointment of a special committee which should enter into communication with the colleges and boards of pharmacy and pharmaceutical associations of the United States and Canada, and from the materials thus collected construct a model form of law to be submitted for the approval of the association at its next annual meeting. The resolution failed of adoption in its original form, but was referred to the officers of the Section on Education and Legislation with power to act. Since then no further official action has been taken by the association until the meeting at Put-in-Bay, Ohio, in 1899, when the present writer, much against his inclination, was appointed to prepare such a draft of a general form of law, which is hereby submitted.

**The Meaning of the Title "Model Law."** At the outset, the writer frankly admits that his idea of what the model should be differs widely from that of some of the foremost writers on the subject, and he therefore feels called upon to set forth briefly his reasons for the draft which is herewith presented.

In the first place, the writer is not in accord with some as to the construction to be placed upon the title "Model Law." Many have understood from this title that the proposal is for a form of law which shall be *ideally perfect* both from a public and from a professional standpoint. From this interpretation the writer is compelled, by what he believes to be the necessities of the case, to dissent. An ideal law would be possible of enactment only in an ideal community, and if communities were ideally perfect, such a form of law would be useless. What was meant by the resolution offered at Montreal was not a form of law which should be without fault, and therefore incapable of further improvement, but a *workable* draft adapted to enactment in the various states where any form of law revolutionary in character would not receive serious consideration. While this may be a disappointment to some who have expected that the model would present some new and startling innovations, the author is of the opinion that a draft based upon a conservative plan will be of far greater helpfulness in promoting progress in pharmaceutical legislation than one based upon purely theoretical considerations could possibly be.

**General Plan of the Model Law.** In accordance with the view above expressed it has been attempted to frame the model in accordance with the following principles:

FIRST:—The model should be constructed as nearly as possible, wholly of tried and tested material, selected from statutes already in force, and should consist of provisions which have withstood the test of experience, and have been found to work well in practice. Experiments should be tabooed, and new provisions not found in existing statutes should be admitted only upon the clearest evidence of their usefulness and practicability.

SECOND:—The machinery required for the enforcement of the law should be simple and inexpensive, as every complication increases the liability to break-downs and the difficulty of enforcing the law.

THIRD:—The form of statement adopted for the various provisions should be as clear and simple as is consistent with the technicalities of legal phraseology indispensable to accuracy and certainty.

FOURTH:—The provisions of the statute should be confined to the creation, support and direction of the board of pharmacy, the requirements for examination and registration, the regulation of the sale of poisons, and the definition and punishment of offenses against the law. Provisions regulative of adulterations and other collateral matters should be left to the general statutes.

FIFTH:—Since experience has shown that nearly all state boards are hampered by lack of necessary funds for the enforcement of the law, the draft should provide ample revenue for the use of the board, and should allow its members such compensation as will justify them in devoting sufficient attention to the law to make it efficient.

**Summary of the Model by Sections.** Section ONE is unavoidably long. Its object is to forbid any one but licensed pharmacists from controlling or managing stores, and to prohibit unlicensed persons from selling drugs in any place or capacity. As criminal statutes must be construed with the greatest strictness, it is absolutely essential that the section which defines the crime should be worded with the greatest exactness and detail.

This section has been prepared after a careful study of all the state laws, and while the author does not flatter himself that it will be found invulnerable, he still ventures to hope that it may prove an improvement over many existing statutes, some of which are so loosely drawn that it is practically impossible to obtain convictions under them.

In order to make this section constitutional, it is necessary that it shall not be a bar to the pursuit of any legitimate business or

occupation. and for this reason several clauses of exceptions have been added. The first of these excludes from the operation of the section the right of a physician to furnish his own patients with such medicines as may deem proper. This exception is not only in accord with public opinion, but is, we believe, essentially just and right, even if it does operate to reduce the number of prescriptions dispensed by the pharmacist. The right to furnish medicines to his patients is inherent in the physician and it is not probable that the legislature would attempt to deprive him of it, or that the courts would sustain any such attempt if made.

The next exception is that of non-poisonous domestic remedies and of patent and proprietary medicines which do not contain poisonous ingredients. While it is the opinion of the writer that the business of dealing in all such substances should be confined to the druggist, he is nevertheless convinced that the restriction herein contained is as much as can be expected in the present state of public education upon the subject.

The insertion of the exception regarding insecticides is based upon the same reasons.

The provision permitting legally licensed assistant pharmacists to manage drug stores in small villages, and dealers in general merchandise to sell certain drugs in country places, it is believed, will do much to disarm the opposition of legislators from rural districts and will at the same time permit the interests of the rural population to be sufficiently safeguarded.

Section Two provides that all persons registered or licensed at the time of the enactment of the proposed law may continue to act under their license without re-examination. In states where renewal is not provided for, it would be necessary to modify this part slightly in order to make a portion of Section II. effective. The section also prescribes the nature of the application which must be filed by new candidates for registration.

Section THREE prescribes the qualifications of pharmacists and assistants. The first must be 21 years of age, a graduate in pharmacy, have four years' experience in pharmacy, and must have been previously registered for two years as an assistant, and in addition must pass a satisfactory examination. Assistants must be 18 years of age, have two years' experience and sustain an examination, but are not required to be graduates.

The requirement of graduation as a pre-requisite to registration is now so generally admitted to be necessary, that it need not be discussed.

The requirement that applicants must have been licensed for two years as assistants is new in the United States, though not in Canada, but its necessity is equally as urgent as that of graduation.

It is conceded by all thoughtful students of the subject that it is at present far too easy for applicants to qualify as managers of pharmacies. The present laws seem to have been composed with the idea that there is a dearth of pharmacists and that the public interest would suffer if the gateway to registration were not as wide as possible. There may be an occasional scarcity of properly qualified assistants, but if there has ever been an insufficient supply of pharmacists to meet all public demands, we have not heard of it.

Another provision of this section permits a reduction of experience in the case of those who have attended schools of pharmacy, provided, however, that a pharmacist must have not less than two years' experience, no matter how long he may have attended college. This is only a reasonable concession in view of the absolute requirement that all candidates must graduate before receiving license as pharmacists.

Section Four provides that licenses shall be granted to successful candidates for *two years*. This is for the purpose of avoiding the contention that when candidates are registered once, they are registered for all time and therefore cannot be compelled to renew their registration.

The latter part of this section provides that the board may refuse license to persons unfitted by reason of drunkenness or addiction to drugs, and that they may revoke licenses for the same cause. In order to avoid the possible charge of arbitrary abuse or power, an appeal is permitted to the governor and attorney general. It is possible that in some states an appeal might have to be taken to a different body.

Section Five authorizes the board to grant licenses to licentiates of other boards, but safeguards the practice in such a way as to avoid possible abuse of the power.

Section Six contains the usual requirement as to the exposure and renewal of certificates and permits, and prescribes the penalties for failing to renew the same. In this section an effort has been made

to state the requirement with clearness and ample detail, so as to minimize as much as possible the occasion for misunderstanding.

Sections SEVEN, EIGHT, NINE, TEN, ELEVEN and TWELVE provide for the appointment of the board of pharmacy and prescribe its powers and duties. The provisions, in the main, are along the usual line of existing laws. Care has been taken to secure definiteness of statement on all important parts. Several features, perhaps, deserve special mention. One of these provides that the record of the board of pharmacy or a properly certified transcript therefrom shall be accepted as competent evidence in all courts. Another is that no provision is made for a treasurer, but that the receipts of the board shall be covered into the state treasury as a special fund for the use of the board.

Another important feature is the one allowing the board to employ an attorney, since local attorneys are frequently loth to undertake prosecutions under the pharmacy law, and usually do so in only a half-hearted way.

Perhaps some objection may be found to the size of the fees required for license and renewals, but the writer is convinced that they are not too great for the expense of the board in order to execute the law as it should be executed.

Section THIRTEEN provides for the labeling and recording the sale of poisons. In the author's opinion it is not within the wit of man to prepare a schedule of poisons which will not still leave something to be desired. Either it will be too broad or too narrow, or either too loose or too rigid. It is not likely that the present attempt has escaped any of these objections. The utmost that has been hoped for has been to prepare a section which shall be reasonably comprehensive without being oppresive, and which shall afford a reasonable protection to the public without too great an interference with trade rights.

Section FOURTEEN requires the preservation of the original of every prescription for a period of five years. The desirability of this provision is doubtless sufficiently obvious without extented explanation.

Section FIFTEEN imposes a license upon itinerant vendors of medicines. Doubtless it would be better if such might be suppressed altogether, but until public opinion is further advanced than at present probably the most that can be done is the regulation of the business by the board of pharmacy in the manner indicated.

The purposes of Sections SIXTEEN, SEVENTEEN, EIGHTEEN and NINETEEN are sufficiently apparent without comment.

**Concerning the Sale of Drugs by Unlicensed Persons.**

Sec. 1. It shall be unlawful for any person not licensed as a pharmacist within the meaning of this act to conduct or manage any pharmacy, drug or chemical store, apothecary shop, or other place of business for the retailing, compounding or dispensing of any drugs, chemicals or poisons, or for the compounding of physician's prescriptions, or to keep exposed for sale at retail any drugs, chemicals or poisons, except as hereafter provided, or for any person not licensed as a pharmacist or assistant pharmacist within the meaning of this act to compound, dispense, or sell at retail any drug, chemical, poison, or pharmaceutical preparation upon the prescription of a physician, or otherwise, or to compound physician's prescriptions, except as an aid to or under the immediate supervision of a person licensed as a pharmacist under this act. And it shall be unlawful for any owner or manager of a pharmacy, or drug store, or other place of business to cause or permit any other than a person licensed as a pharmacist or assistant pharmacist to compound, dispense or sell at retail any drug, medicine or poison, except as an aid to or under the immediate supervision of a person licensed as a pharmacist or assistant pharmacist.

Provided, however, that nothing in this section shall be construed to interfere with any legally licensed practitioner of medicine or dentistry in the compounding of his own prescriptions, or to prevent him from supplying to his patients such medicines as he may deem proper, nor with the exclusively wholesale business of any dealer who shall be licensed as a pharmacist or who shall keep in his employ at least one person who is licensed as a pharmacist, nor with the selling at retail of non-poisonous domestic remedies, nor with the sale of patent or proprietary preparations which do not contain poisonous ingredients, nor with the sale of poisonous substances which are sold exclusively for use in the arts, or for use as insecticides, when such substances are sold in unbroken packages bearing a label having plainly printed upon it the name of the contents, the word Poison, and the names of at least two readily obtainable antidotes.

Provided further that in any village of not more than 500 inhabitants where there is no person licensed as pharmacist within less than two miles of such village the board of pharmacy may grant to any person who is licensed as assistant pharmacist a permit to conduct a drug store or pharmacy in such village, which permit shall not be valid in any other village than the one for which it was granted, and shall cease and determine when the population of the village for which such permit was granted shall become greater than 500, and provided also that in rural districts where there is no person licensed as pharmacist or assistant pharmacist within less than

two miles the board of pharmacy may issue permits to dealers in general merchandise to sell such drugs and medicines as may be specified by the board, which permit shall run for a period of two years.

Within the meaning of this act, rural districts are villages or other places of not more than 200 inhabitants.

**Concerning Examinations and Registration.**

Sec. 2. Every person now licensed or registered as a pharmacist or assistant pharmacist under the laws of this state shall be entitled to continue in the practice of his profession until the expiration of the term for which his certificate of registration or license was issued. Every person who shall hereafter desire to be licensed as a pharmacist or assistant pharmacist shall file with the secretary of the board of pharmacy an application, duly verified under oath, setting forth the name and age of the applicant, the place or places at which, and the time spent in the study of the science and art of pharmacy, the experience in the compounding of physician's prescriptions which the applicant has had under the direction of a legally licensed pharmacist, and shall appear at a time and place designated by the board of pharmacy and submit to an examination as to his qualifications for registration as a licensed pharmacist or assistant pharmacist.

Sec. 3. In order to be licensed as a pharmacist within the meaning of this act, an applicant shall be not less than 21 years of age, and shall have been licensed as an assistant pharmacist for not less than two years prior to his application for license as a pharmacist, and he shall present to the board satisfactory evidence that he is a graduate of a reputable school or college of pharmacy, and that he has had four years' experience in pharmacy under the instruction of a licensed pharmacist, and he shall also pass a satisfactory examination before the board of pharmacy.

In order to be licensed as an assistant pharmacist within the meaning of this act, an applicant shall be not less than 18 years of age, and shall have had not less than two years' experience in pharmacy under the instruction of a licensed pharmacist, and shall pass a satisfactory examination before the board of pharmacy.

Provided, however, that in the case of persons who have attended a reputable school or college of pharmacy the actual time of attendance at such school or college of pharmacy may be deducted from the time of experience required of pharmacists and assistant pharmacists, but in no case shall less than two years' experience be required for registration as a licensed pharmacist.

Sec. 4. If the applicant for license as a pharmacist or assistant pharmacist has complied with all the requirements of the two preceding sections, the board of pharmacy shall enroll his name upon the register of pharmacists or assistant pharmacists and issue to him a license which shall entitle him

to practice as pharmacist or assistant pharmacist for a period of two years from the date of the said license.

The board of pharmacy may refuse to grant a license to any person guilty of felony or gross immorality, or who is addicted to the use of alcoholic liquors or narcotic drugs to such an extent as to render him unfit to practice pharmacy; and the board of pharmacy may, after due notice and hearing, revoke a license for like cause, or any license which has been procured by fraud.

An appeal from the action of the board in refusing to grant or in revoking a license for such cause may be taken to the Governor and Attorney General; the decision of this officers, either affirming or over-ruling the action of the board, shall be final.

Sec. 5. The board of pharmacy may issue licenses to practice as pharmacists or assistant pharmacists in this state, without examination, to such persons as have been legally registered or licensed as pharmacists or assistant pharmacists in other states or foreign countries, provided that the applicant for such license shall present satisfactory evidence of the same qualifications as are required from licentiates in this state, and that he was registered or licensed by examination in such other state or foreign country, and that the standard of competence required in such other state or foreign country is not lower than that required in this state, and provided also that the board is satisfied that such other state or foreign country accords similar recognition to the licentiates of this state.

Applicants for license under this section shall with their application forward to the Secretary of the board of pharmacy the same fees as are required of other candidates for license.

Sec. 6. Every certificate of license to practice as pharmacist or assistant pharmacist and every permit to an assistant pharmacist to conduct a drug store in villages of not more than 500 inhabitants, and every permit issued to dealers in general merchandise in rural districts to sell a list of drugs and medicines prescribed by the board of pharmacy, and every renewal of such license or permit shall be conspicuously exposed in the pharmacy or drug store or place of business of which the pharmacist or assistant pharmacist or other person to whom it is issued is the owner or manager, or in which he is employed

Every licensed pharmacist or assistant pharmacist who desires to continue in the practice of his profession, and every person holding a permit to sell drugs in rural districts shall, within thirty days next preceding the expiration of his license or permit, file with the board an application for the renewal thereof, which application shall be accompanied by the fee hereinafter prescribed. If the board shall find that the applicant has been legally licensed in this state and is entitled to a renewal thereof, or to a renewal of such permit, it shall issue to him a certificate attesting that fact.

If any pharmacist or assistant pharmacist shall fail, for a period of sixty days after the expiration of his license, to make application to the board for its renewal, his name shall be erased from the register of licensed pharmacists or assistant pharmacists, and such person in order to again become registered as a licensed pharmacist or assistant pharmacist shall be required to proceed as in the case of original registration. And if any holder of a permit to sell drugs in rural districts shall fail for a period of sixty days after the expiration of his permit to make application for the renewal thereof, his name shall be erased from the register of persons holding such permits, and may be restored thereto only upon the payment of the fee required for the granting of original permits.

**Concerning the Board of Pharmacy.**

Sec. 7. The Board of Pharmacy shall consist of five persons licensed as pharmacists within this state who shall be appointed by the Governor, by and with the advice of the ———, and who shall hold their office for five years from the date of their appointment, and until their successors shall have been appointed and qualified. The members of the board first appointed shall hold their offices for one, two, three, four and five years respectively, as shall be designated in their several commissions.

Annually the ——— Pharmaceutical Association may submit to the Governor the names of five persons licensed as pharmacists, within this state, and from this number, or from others, the Governor, by and with the advice of the ———, shall appoint one member to fill the vacancy annually occurring in the board of pharmacy, and vacancies occurring from any other cause shall be filled in like manner.

The members of the present board of pharmacy shall continue in office until the expiration of their respective terms, and the vacancies thus occurring shall be filled as previously designated.

Sec. 8. Annually the board of pharmacy shall organize by the election of a president and secretary, both of whom shall be members of the board, who shall hold their offices for one year and until their successors shall have been elected and qualified.

The Secretary shall give bond in such sum as may be prescribed by the board, conditioned for the discharge of the duties of his office according to law.

The board shall hold four meetings each year, at ———, at such times and places as it may provide by rule, for the examination of candidates, and for the discharge of such other business as may legally come before it, and such additional meetings as may be necessary.

Sec. 9. The Board of Pharmacy shall have a common seal, and shall have power to adopt such rules and by-laws not inconsistent with the law as may be necessary for the regulation of its proceedings and for the dis-

charge of the duties imposed under this statute, and shall have power to employ an attorney to conduct prosecutions or to assist in the conduct of prosecutions under this act.

The board shall keep a record of its proceedings and a register of all persons to whom certificates of license as pharmacists or assistant pharmacists and permits have been issued, and of all renewals thereof; and the books and register of the board or a copy of any part thereof certified by the secretary, attested by the seal of the board, shall be accepted as competent evidence in all the courts of this state.

The board of pharmacy shall make annually to the Governor and to the ——— Pharmaceutical Association a written report of its proceedings and of its receipts and disbursements under this act, and of all persons licensed to practice as pharmacists and assistant pharmacists in this state. A majority of the board shall constitute a quorum for the transaction of business.

The president and secretary shall have the power to administer oaths in matters pertaining to the examination and registration of pharmacists and assistant pharmacists.

Sec. 10. The secretary shall receive such salary as may be prescribed by the board of pharmacy, and his necessary expenses while engaged in the performance of his official duties. The other members shall receive the sum of five dollars for each day actually employed in the discharge of their official duties, and their necessary expenses while engaged therein.

All fees collected by the secretary for the examination of pharmacists and assistant pharmacists, and for the issuing of the permits authorized by this act, and for the renewal of certificates of registration and permits, and all fines collected under prosecutions begun or caused to be begun by the board of pharmacy, and all other funds collected under this act shall by him be covered into the state treasury monthly, and shall be placed to the credit of a fund which is hereby appropriated for the use of the board of pharmacy.

The compensation and expenses of the secretary and members of the board of pharmacy, and all expenses incurred by the board in carrying into execution the provisions of this act shall be paid out of said fund upon the warrant of the auditor of state issued upon requisition signed by the president and secretary of the board.

Sec. 11. Upon information that any provision of this law has been or is being violated, the secretary of the board of pharmacy shall investigate the matter, and upon probable cause appearing shall file a complaint and prosecute the offender therefore.

It shall be the duty of the prosecuting attorney, upon request of the secretary, to take charge of and conduct such prosecutions.

All fines assessed and collected under prosecutions begun or caused to be begun under this act shall be paid to the secretary and by him covered into

the state treasury monthly, and shall be credited to the fund for the use of the board of pharmacy.

Sec. 12. The board of pharmacy shall be entitled to charge and collect the following fees: For the examination of an applicant for license as a pharmacist, $10.00; for the examination of an applicant for license as an assistant pharmacist, $5.00. For renewing the license of a pharmacist, $2.00; for renewing the license of an assistant pharmacist, $1.00. For issuing a permit to an assistant pharmacist to conduct a drug store in villages of not more than 500 inhabitants, $2.00; for issuing a permit to dealers in general merchandise to sell certain drugs in rural districts, $2.00; and for the renewal thereof, $1.00.

All fees shall be paid before any applicant may be admitted to examination or his name placed upon the register of pharmacists or assistant pharmacists, or before any license or permit, or any renewal thereof, may be issued by the board.

**Concerning the Sale and Registration of Poisons.**

Sec. 13. It shall be unlawful for any person to sell or deliver to any minor under sixteen years of age, except upon the written order of an adult, or to sell or deliver to any person any of the following described substances, or any poisonous compound, combination or preparation thereof, towit: The compounds and salts of Arsenic, Antimony, Gold, Lead, Mercury, Silver, Copper, Chromium and Zinc, the caustic Hydrates of Sodium and Potassium, Solution or Water of Ammonia, the concentrated Mineral Acids, Oxalic and Hydrocyanic Acids and their salts, Yellow Phosphorus, Paris Green, Carbolic Acid, the Essential Oils of Almonds, Pennyroyal, Tansy and Savine, Croton Oil, Creosote, Chloroform, Chloral Hydrate, Cantharides, or any Aconite, Belladonna, Bitter Almonds, Colchicum, Cotton Root, Cocculus Indicus, Conium, Cannabis Indica, Digitalis, Hyoscyamus, Ignatia, Lobelia, Nux Vomica, Opium, Physostigma, Phytolacca, Strophanthus, Stramonium, Veratrum Viride, or any of the poisonous alkaloids or alkaloidal salts or other poisonous principles derived from the foregoing, or cocaine and veratrine or any other poisonous alkaloids or their salts, or any other virulent poison, except in the manner following:—

It shall first be learned by due inquiry that the person to whom delivery is made is aware of the poisonous character of the substance, and that it is desired for a lawful purpose, and the box, bottle or other package shall be plainly labeled with the name of the substance, the word Poison, the name of the person or firm dispensing the substance, and the names of two or more substances which may be used as antidotes. And before a delivery shall be made of any of the foregoing substances there shall be recorded in a book kept for the purpose the name of the article, the quantity delivered, the purpose for which it is intended to be used, the date of delivery, the name

and address of the purchaser, and the name of the dispenser, which book shall be preserved for at least five years, and shall at all times be open to the inspection of the proper officers of the law.

Provided, however, that the foregoing provision shall not apply to articles dispensed upon the order of persons believed by the dispenser to be lawfully authorized practitioners of medicine or dentistry, and provided, also, that the record of sale and delivery above mentioned shall not be required of manufacturers and wholesalers who shall sell any of the foregoing substances at wholesale, but the box, bottle or other package containing such substance when sold at wholesale shall be properly labeled with the name of the substance, the word Poison, and the name and address of the manufacturer or wholesaler.

And it is further provided that it shall not be necessary to place a poison label upon or to record the delivery of the sulfid of antimony, or the oxid or carbonate of zinc, or of colors ground in oil and intended for use as paints, or calomel, paregoric, or other preparations of opium containing less than two grains of opium to the fluid ounce, nor in the case of preparations containing any of the substances named in this section when a single box, bottle or other package, or when the bulk of two fluid ounces or the weight of two avoirdupois ounces does not contain more than an adult medicinal dose of such poisonous substance.

**General Provisions.**

Sec. 14. Every proprietor or manager of a drug store or pharmacy shall keep in his place of business a suitable book or file in which shall be preserved for a period of not less than five years the original of every prescription compounded or dispensed at such store or pharmacy. Upon request the proprietor or manager of such store shall furnish to the prescribing physician, or to the person for whom such prescription was compounded or dispensed, a true and correct copy thereof, and said book or file of original prescriptions shall at all times be open to the inspection of duly authorized officers of the law.

Sec. 15. It shall be unlawful for any person to sell or to offer for sale by public outcry or by vending in the street, any drug, medicine, chemical, or any composition or combination thereof, or any implement or appliance or other agency for the treatment of disease, injury or deformity, unless such person shall have first procured from the board of pharmacy a license for such purpose, for which license there shall be paid to the board of pharmacy the sum of $100.00 per annum. And no such license shall be granted for the sale of any substance or thing the use of which may be injurious to health or public morals.

Sec. 16. It shall be unlawful for any person not legally licensed as a pharmacist to take, use, or exhibit the title or pharmacist, or licensed or

registered pharmacist, or the title druggist, or apothecary, or any other title or description of like import; and it shall be unlawful for any person not legally licensed as an assistant pharmacist to take, use or exhibit the title of assistant pharmacist, or any other title or description of like import.

Sec. 17. All persons licensed under this act as pharmacists or assistant pharmacists and actively engaged in the practice of their profession shall be free and exempt from jury duty in all the courts of this state.

Sect. 18. Whoever, not being licensed as a pharmacist shall conduct or manage any drug store, pharmacy, or other place of business for the compounding, dispensing or sale at retail of any drugs, medicines or poisons, or for the compounding of physicians's prescriptions contrary to the provisions of Section One of this act shall be deemed guilty of a misdemeanor, and on conviction thereof shall be fined not less than $25.00 nor more than $100.00, and each week such drug store or pharmacy, or other place of business is so unlawfully conducted shall be held to constitute a separate and distinct offense.

Whoever, not being licensed as a pharmacist or assistant pharmacist, shall compound, dispense, or sell at retail any drug, medicine, poison or pharmaceutical preparation, either upon a physician's prescription or otherwise, and whoever being the owner or manager of a drug store, pharmacy, or other place of business shall cause or permit any one not licensed as a pharmacist or assistant pharmacist to dispense, sell at retail, or compound any drug, medicine, poison, or physician's prescription contrary to the provisions of Section One of this act, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not less than $10.00 nor more than $100.00.

Any license or permit or renewal thereof obtained through fraud or by any false or fraudulent representation shall be void and of no effect in law. Any person who shall make any false or fraudulent representation for the purpose of procuring a license or permit or renewal thereof, either for himself or for another, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not less than $25.00 nor more than $100.00, and any person who shall willfully make a false affidavit for the purpose of procuring a license or permit or renewal thereof, either for himself or for another, shall be deemed guilty of perjury, and upon conviction thereof shall be subject to like punishment as in other cases of perjury.

Whoever, being the holder of any license or permit granted under this act shall fail to expose such license or permit or any renewal thereof in a conspicuous position in the place of business to which such license or permit relates, or in which the holder thereof is employed, contrary to the provisions of Section Six of this act shall upon conviction thereof be fined not

less than $5.00 nor more than $25.00, and each week that such license, permit or renewal shall not be exposed shall be held to constitute a separate and distinct offense. And whoever, being the holder of any license or permit granted under this act, shall, after the expiration of such license or permit, and without renewing the same, continue to carry on the business for which such license or permit was granted, contrary to the provisions of Section Six of this act, shall upon conviction thereof be fined not less than $5.00 nor more than $25.00.

Whoever shall sell or deliver to any person any poisonous substance specified in Section Thirteen of this act without labeling the same and recording the delivery thereof in the manner prescribed in said Section Thirteen, shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not less than $10.00 nor more than $100.00.

Whoever shall sell or offer for sale by peddling from house to house, or offer for sale by public outcry or by vending in the street, any drug, medicine, chemical or combination thereof, or any implement or appliance for the treatment of disease, injury or deformity, without having first procured from the board of pharmacy the license specified in Section Fifteen of this act shall be deemed guilty of a misdemeanor and upon conviction thereof shall be fined not less than $25.00 nor more than $200.00.

Whoever, not being legally licensed as a pharmacist, shall take, use, or exhibit the title of pharmacist, licensed or registered pharmacist, druggist, apothecary, or any title of similar import, contrary to the provisions of Section Sixteen of this act, and whoever, not being legally licensed as an assistant pharmacist, shall take, use, or exhibit the title of assistant pharmacist, or any title of similar import, contrary to the provisions of said Section Sixteen shall be deemed guilty of a misdemeanor, and upon conviction thereof shall be fined not less than $10.00 nor more than $50.00.

Sec. 19. This act shall be in force from and after its passage, and all acts or parts of acts in conflict with this act shall be and the same are hereby repealed.

## Saw Palmetto Oil.

By *Oswald Schreiner.*

The first mention of a volatile oil from saw palmetto berries was made in 1894 by Sherrand,[1] who claims to have obtained from the chloroformic extract of the dry ripe berries 0.54 p. c. of volatile oil and 12.80 p. c. of fixed oil.

[1] Proc. Am. Pharm. Assn., 42, p. 312.

In 1895 Rusby, Bastedo and Coblentz contributed a lengthy article on the pharmacology of saw palmetto.[2] In this, Coblentz mentions having obtained a very small quantity of volatile oil by steam distillation from the air-dried berries, which had been reduced to a pulp, and also from the benzol extract of the drug. He describes it as having a peculiar persistent odor, characteristic of the berries. Although this appears to be the first mention of the distilled volatile oil of saw palmetto, it was, as will appear later, distilled in much larger quantity as early as 1890 by J. U. Lloyd.

In June 1899, Sherman and Briggs[3] reported the very interesting results of their investigation of saw palmetto. The greater part of their report is devoted to the volatile and fatty oils. The oil was obtained by expression from the berries marked ¾ ripe and which had been reduced to a pulp and the seeds removed. The oil separated on top of the aqueous juice. About 1.5 p. c. of oil was obtained in this way. Of this oil only a very small quantity was volatile with water vapor, and when distilled under ordinary pressure only small amounts passed over and decomposition soon set in. By distillation under diminished pressure they were able to separate the oil into several fractions. They found the oil to consist largely of free fatty acids, about 63 p. c., caproic, caprylic, capric, lauric, palmitic and oleic acids, and of the ethyl esters of these acids, about 38 p. c. No glycerin was found in the oil from the berries.

In the oil expressed from the seeds, however, they found the glycerides of caprylic, capric, lauric, palmitic, stearic and oleic acids. The amount of free acids was comparatively small, only 2.3 p. c. being present. No mention is made of the presence of ethyl esters in this oil.

Inasmuch as this is the first volatile oil recorded from a member of the palm family, the investigation referred to above is of special interest. The great similarity of the volatile and fatty oils as far as the acids contained in both are concerned is certainly striking.

The thought naturally suggested itself at once that the volatile oil might have resulted in one way or another from the fatty oil. Having had occasion to look up other literature on saw palmetto recently, the above suspicion was again revived.

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[2] Proc. New Jersey Pharm. Assoc., 1895, p. 45.
[3] Pharm. Archives, 2, p. 101.

Parke, Davis & Co.[4] make the following statement: "The fruit, although sweet, cannot be called palatable; it contains both a fixed and a volatile oil and is the part of the plant used medicinally." In the botanic description taken from Chapman's Flora of the Southern United States (p. 438) no mention of an odor of the berries is made. Nor does Rusby, in the monograph referred to, make any mention of the odor of the fresh berries in his compilation of the botanical characteristics of the plant, although, as appears from the bibliography cited, he has consulted most of the authorities on southern plant life. An odor so peculiar and characteristic as that of the volatile oil ought surely to attract the attention of the botanist and would no doubt be mentioned by him. However, such considerations do not prove the absence of odor in the fresh berries, as botanists often neglect to state such properties as are not botanical in nature. Sherrard, in the article referred to, does make mention of the peculiar and characteristic aromatic odor of the drug, due, he says, to the presence of the volatile oil which he found in the chloroformic extract. Coblentz also refers indirectly to the similarity of the odor of the volatile oil and the berries. Both these investigators, however, are speaking of the dried fruit, saying nothing as to the treatment which the berries had received previous to the drying. Sherman and Briggs, however, make mention of the treatment to which their berries had been subjected previous to their investigation. The berries had, as we are informed is customary, been collected and placed in barrels and preserved for future use by adding a small amount of alcohol. As already stated, the oil obtained by expression consisted largely of free fatty acids and their ethyl esters. The fruity odor of this oil was due to the ethyl esters; in fact Sherman and Briggs converted the acids into their ethyl esters by means of alcohol and hydrochloric acid and found them to have the same properties as those of the natural oil.

Neither of the investigators mentioned above give any of the physical constants, such as sp. gr., rotation, refraction. It was, therefore, thought to be of interest to determine these properties of the oil. Prof. J. U. Lloyd kindly placed the following material at our disposal, together with his personal experience with the oil, which, as already mentioned, he distilled as early as 1890, as well as material especially distilled for this investigation.

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[4] Pharmacology of the newer materia medica, No. 52, p. 1140.

**Distilled Oil of Saw Palmetto Berries.**

The oil as sent had been distilled in 1890 by J. U. Lloyd from 25 lbs. of fresh saw palmetto berries.[5] The quantity received was 135 g. The yield is therefore 1.2 p. c. The oil had not been redistilled. Prof. Lloyd writes in a personal communication: "The oil as distilled has a green color, not due to copper, and the odor of old cheese or oenanthic ether." The oil, which had stood for 10 years, had still retained its green color and had a fruity, etherial odor, which is pleasant when diluted, but rather disagreeable when concentrated.

Its specific gravity at 20° is 0.8682. Its optical properties could not be determined on account of its color. When distilled under 18 mm. pressure the thermometer rose rapidly from 60—130°, then more slowly. The principal fraction came over between 145 and 155°. The distillate was collected up to 170°. 15 g. of a very dark residue remained, which solidified on cooling. The sides of the flask had a slight deposit of a reddish substance, like oxide of copper, but when dissolved in nitric acid no reactions for copper could be obtained. 120 g. of a colorless distillate were obtained. It showed the sp. gr. 0.8679 at 20°; $n_D = 1.41233$, and was optically inactive.

As is seen, the sp. gr. of the oil is changed but slightly by the distillation. This oil is undoubtedly of a different composition than the expressed oil of Sherman and Briggs. While the above distilled oil came over almost entirely below 170° under a pressure of 18 mm., the expressed oil of S. & B. gave only about 6 p. c. of distillate up to 165° under 16 mm. pressure, the largest fractions being obtained at 200—220° and 220—230°, whereas the above oil gave its principal fraction at 145—155° under nearly the same pressure. A chemical examination of the oil will be made later.

**Crude Oil of Saw Palmetto Berries from the Fluid Extract.**

This oil was not obtained by distillation, but from the fluid extract. The fluid extract of fresh saw palmetto berries, made with official alcohol, separates on standing a considerable quantity of an oil, which is usually of a decided green color, although it may contain impurities sufficient to make it brownish. The oil is obtained by siphoning off this layer. Two samples were received:

No. 1. This oil was of a green color, had the characteristic odor of the distilled oil, but less pleasant, even when dilute. Its sp. gr.

[5] Unfortunately the laboratory notes on the properties of this oil made ten years ago have been lost and it is now impossible to say whether these berries were fresh as gathered, or whether they had been preserved in alcohol.

at 20° is 0.8651. It is scarcely volatile with water vapor, only 0.5 p. c. of distillate being obtained in several hours. The sp. gr. of the green distillate is 0.8650 at 20°, strikingly close to that of the original undistilled oil.

No. 2. This sample differed from No. 1 in color, being of a dark brown color, and in its higher specific gravity, 0.8775 at 20°. In odor they were alike. It was likewise difficultly volatile with water vapor. 157 g., when subjected to steam distillation for 2 hrs., gave a distillate of 1.255 g. of water and only 6 g. of a brownish oil, which had the specific gravity 0.8653 at 20°. This is very close to that of the distillate obtained from No. 1.

In corresponding with Prof. Lloyd concerning the yield of oil from the fresh and the dried berries, he writes:

"Dry saw palmetto berries do not yield the oil, but, I think the fresh, either in alcohol or recent, will do so.

"In order to test the matter for you this day I put 25 lbs. of ground dry berries into a still with 10 gallons of water and distilled 4 gallons. No volatile oil was obtained.

"I then put 25 lbs. of the dry ground berries, one gallon of alcohol and nine gallons of water into the still and distilled four gallons. No evidences of the volatile oil.

"I will say, however, that the usual concrete fatty product that appears on the distillate of all roots was present in very small amount."

However, on the following day, Prof. Lloyd writes:

"On standing the distillate of yesterday separated a fatty substance of the characteristic odor. These I send to you. The green color may be due to copper from the worm."

The two samples as sent had indeed a characteristic odor, but it was not the fruity, ester-like odor of the distilled oil, but rather a rancid, disagreeable odor. The odor does indeed remind one of saw palmetto, but when compared with the odor of the distilled oil it is quite different, possessing the heavy, disagreeable part of the odor, without the pleasant fruity flavor of the oil.

No. 1. This was in pale blue scales moist with water. It was the product of the distillation of 25 lbs. of the dry ground berries and 1 gal. of alcohol and 9 gal. of water. Yield 0.026 p. c. The scales were dried by pressing on a porous plate and then put into a desiccator. Melting point 75—80°.

No. 2. This was the product of the distillate of 25 lbs. of the dry ground berries and 10 gal. of water. Yield 0.012 p. c. It also was in pale blue scales, but dry. Melting point 70—75°. The scales when washed with water, pressed on a porous plate and then dried in a desiccator, showed a somewhat higher and more sharp melting point, namely 75—77°.

These samples are probably fatty acids, but the high melting point is somewhat surprising, as the acids found by Sherman and Briggs in the oil all melt below 62°. The melting point would indicate acids still higher in the series than those found by these investigators.

The above result clearly shows that the volatile oil as such is certainly not present in the dried berries. Whether or not it is present in the fresh, recent fruit, or whether it is formed by the slow action of the fatty acids on the alcohol in which the berries are kept, can only be decided by experiment. Prof. Lloyd has kindly offered to subject some of the fresh, unpreserved fruit to distillation as soon as the crop is ripe.

# Medical Commission to the Philippines.*

By *Lewellys F. Barker.*

At Cavite, an outbreak of some two hundred cases of beri beri among the Filipino prisoners yielded wide opportunity for the study of this disease in its various clinical and pathological aspects. In the same town a large epidemic of what was probably Dengue fever occurred.

The cases at the Spanish hospital of San Juan de Dios, those at San Lazarus, the leprosy hospital, and those at the city asylum, were made accessible to study through the kindness of Major Frank Bourns, of the Provost-Marshal's department. There were still a few smallpox cases in the city, though through the strenuous exertions of the officer mentioned, in the way of compulsory vaccination and the establishment of a *carabao* vaccine farm, this disease, which claimed so many victims from among the American soldiers at the beginning of the occupation, was practically stamped out of Manila. Skin dis-

* Continued from p. 178.

eases are very prevalent among the natives, and the affection known as dhobie itch (for the most part a form of ringworm) attacked large numbers of American soldiers.

A considerable amount of pathological material was collected by the members of the Commission especially from cases of beri beri, leprosy and dysentery, and this was brought back to America for further study. An abundance of plague material was similarly collected at Hong Kong. Bubonic plague does not exist in Manila, and a careful search through the older records would make it appear that it has never broken out in the Philippines.

The climate, though trying, owing to the continuous heat and moisture, is believed to be supportable if Americans will take certain necessary precautions. As one genial Englishman who has lived in Manila nineteen years, and who is now in perfect health, put it, "it is not so much the climate as the glass bottle which injures people out here." The visit of the Commission to the islands was made in the hottest season of the year, and at the beginning of July the onset of the rains by increasing the moisture in the air added much to the discomfort. However, if one carefully chooses his diet, eschews iced drinks, clothes himself rationally, avoids excesses both physical and mental, keeps out of the sun during the hottest time of the day, sleeps under mosquito-netting and does not bathe in too cold water, he may live a fairly comfortable life and will probably enjoy good health. Indeed, some Americans have found themselves in better health in Manila than at home, though this is the exception rather than the rule. Diarrheal troubles are very frequent and are to be combated by rest, a simple diet and, if necessary, by wearing a woolen abdominal band. Much has been written about the drinking of boiled water by the soldiers. Outside Manila this is certainly desirable, but any attempt to persuade soldiers on the march to follow this custom will probably prove futile. The Johns Hopkins party walked one afternoon from the Bag Bag river to San Fernando, and before the end of the journey found themselves drinking any water available, some of it certainly far from pure.

Early in July, Mr. Garrett left Manila for a trip through Java, and a few days later the rest of the party returned to Hong Kong, and began the homeward voyage which was made by way of Suez and London. Two members of the Commission spent three weeks in India, and there examined as fully as possible in the time the out-

breaks of plague which existed and the plague measures adopted by English officers in the Indian Empire. In Bombay, Colonel Weir, and in Poona, Major Reid and Major Windle accompanied them to the scene of the outbreaks.

The excursion to Poona was most impressive. Travelling upward for hours through the Western Ghats, the country was so beautiful and the air so much cooler than at the sea level that one could scarcely believe that he was approaching, in the plain, a little lower down on the other side, the pest-stricken city of Poona. On arrival at the railway station, however, the first signs of distress were noticed. Train-loads of people were fleeing from the place. A drive through the town to the office of the chief plague authority showed how rapidly it was being deserted. Many of the streets were almost empty, shop doors and windows were closed and barricaded, plague notices were pasted on the wall, a preternatural stillness was everywhere noticeable, the few people encountered walking quietly along with heads bowed and faces sorrowful. A visit was made to some houses whence plague cases had just been reported with the native editor of the principal Poona newspaper, this gentleman having volunteered his services as plague inspector. In a small hovel, scarcely larger than a ship's cabin, one might find a patient surrounded by several of his friends awaiting the arrival of the inspector. The chances for contact contamination were manifold.

At the general plague hospital there were some eight hundred cases of the disease under the charge of Major Windle. He was assisted by eight European nurses and a number of native helpers. He complained that it was almost impossible to retain natives as workmen; even washermen and grave-diggers could not be employed in sufficient numbers owing to the fears and prejudices of the people. Cartloads of the newly attacked were being brought into the hospital at its entrance, while a body was carried out from the wards every ten minutes to the morgue at the rear. Those who live in the West can scarcely appreciate the enormous disadvantages under which medical men fight plague in India. The people are ignorant and superstitious, the rigid caste rules prevent any successful application of modern hygienic measures, and even the preventive inoculation can not be utilized to any great extent, owing to the fact that thus far the bacilli have been grown in beef-broth, and the natives will not countenance such a profanation of the sacred animal. Even in death,

caste rules have to be observed, and it was found at the morgue that partitions had to be put up separating the low-caste Hindoos from those of high caste, from the Mohammedans and from the Parsees and Christians. The floor of the morgue presented a melancholy sight; in one of the rooms no less than thirty-two bodies lay upon the ground as closely packed as was possible without actually piling the bodies upon one another. Mohammedans are buried and high-caste Hindoos are burned, but the bodies sometimes accumulate so fast that they cannot be disposed of by the usual methods. Major Windle stated that one day, a short time before, he had burned twenty-four bodies in one heap. It is absolutely impossible in Poona to employ occidental methods in the way of segregation or disinfection. The natives prefer to die rather than submit to rules which are obnoxious to them. It is no uncommon sight to see a widow, after uttering the death vail, beating her face and breasts and throwing herself violently upon the body of her dead husband, kissing his face and lips; it is very strange that no more than do contract the disease. One left Poona and Bombay thankful that in America no such unfavorable religious and social conditions prevail.

Of the results which have been obtained by the Commission, it is too early as yet to speak more than generally. The observations made in Manila have to be supplemented and controlled by further microscopical and bacteriological studies upon the material collected. It will be some months at least before a full report can be looked for.

At present the observations concerning the causation of dysentery, the differentiation of the fevers of the region, the relative prevalence of typhoid fever and malaria, the studies of the varieties of the malarial parasite there found, and investigations of beri beri, may be specified as among the more important scientific results of the expedition. The influence of the scientific spirit and methods, with the demonstration of their practical utility, so beneficial in medical centers at home and exerted at so early a period in the American regime in the Philippines, can scarcely fail to be of significance in the further development of medicine there.

It is probable that in the near future other expeditions will be undertaken, as only a beginning in the study of tropical medicine has been made. England and Germany are alive to the importance of such investigations. Major Ross has recently been sent to East Africa to continue his studies upon the part played by mosquitoes in the

dissemination of malarial parasites, and Dr. Wright is being sent by the English government to establish a laboratory in the Malay peninsula for the study of beri beri. Prof. Koch, of Berlin, has also lately been sent on another expedition for the investigation of the malarial fevers in the tropics. Schools of tropical medicine are being established at various English and continental ports. The time seems ripe also for undertaking instruction in tropical diseases in America. The establishment of investigating institutes and of teaching departments in such cities as San Francisco, New Orleans, Baltimore and New York would be an additional safeguard to the country, since these are ports most likely to be infected. Moreover, careful instruction as regards diseases peculiar to the tropics and the special character assumed by other diseases when they occur in the hotter regions of the earth would seem to be essentials for those American physicians and surgeons who contemplate residence or practice in our tropical possessions.

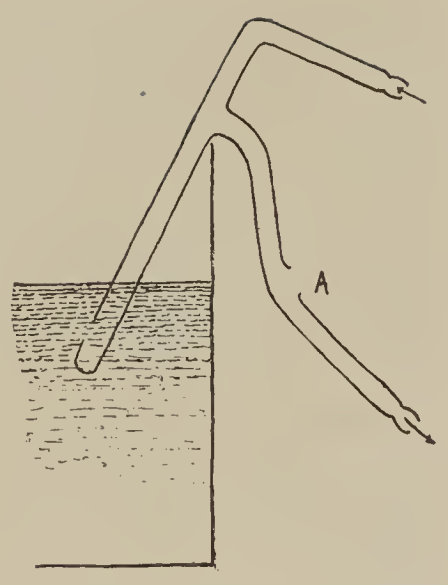
# MONTHLY REVIEW.

## Pharmaceutical Technique.

**Weighing Flask for Oil Extraction.**—In order to overcome the error in weighing large flasks when only a small amount of extracted oil is to be weighed, F. A. Anderson has employed the special extraction flasks shown in the figure. An ordinary flask of about 150 cc. capacity is provided with a side tube fused on rather above the center, and on to this side tube is ground a little weighing flask of about 10 cc. capacity. The side tube projects a little way into the weighing flask, as shown. The little flask is cleaned, heated in a water-oven, cooled and weighed. It is then placed in position and the large flask connected to the extractor as usual. At the end of the extraction the solvent is evaporated off until only enough remains to hold the oil in solution, and the larger flask is then disconnected and slowly tilted until the residue runs into the little flask. If the little flask is then warmed, the large flask may be rinsed out by the condensed vapor of the solvent. When the oil is completely transferred, the little flask is disconnected, heated in the water-oven, and weighed.

[Chem. News, 81, p. 45.] *O. S.*

**New Form of Water-bath Regulator.** — The annexed figure illustrates a form of apparatus designed by H. S. Hatfield, which is not stopped in its action by air bubbles, which are very apt to form when ordinary tap water is used. The supply tube bifurcates, and one limb clips under the liquid in the bath. The other is opened to the air at *A*. The water in the bath will keep at the level of *A*, or slightly above it; the excess of level being due to the force necessary to divert the stream of water. All the tubes must be full of water, but air bubbles on rising are immediately swept away by the current of water, which must be sufficient to do this properly, but need not be great. The water must leave the sides of the glass at *A*.




[Chem. News, 81, p. 65.] *O. S.*

## Chemistry.

**The Estimation of the Alkaloids of Stramonium, Henbane and Belladonna Leaves.** — E. Schmidt proposes the following modification of the Keller method of assay: The extraction of the alkaloids with ether-chloroform is carried out practically as directed in the original process. The aliquot portion of the ether-chloroform solution is received in a flask and of this one-half distilled off to remove ammonia. The dark green liquid remaining in the flask is then transferred to a separatory funnel, three portions of ether, 5 cc. each, being used to rinse the flask. The solution is now shaken with 10 cc. N/100 hydrochloric acid and allowed to stand until complete separation has taken place (if the ether-chloroform does not float upon the watery solution, ether is to be added until it does). The aqueous solution as drawn off is filtered through a small moistened filter into a 200 cc. flask, and the ether-chloroform solution washed with three portions of water, 10 cc. each, this passed through the same filter and finally water is added to make a total filtrate of about 100 cc. To this solution ether and iodo-eosin solution are added and then N/100 potassium hydrate until the watery solution becomes faintly pink.

By this method the author obtained from wild belladonna leaves 0.40 p. c., from cultivated belladonna leaves 0.26 p. c. alkaloid calculated as atropine. Stramonium leaves contained on an average 0.40 p. c. of alkaloid calculated as atropine. Henbane leaves, without petioles, contained 0.2762 to 0.2861 p. c., the leaf-stalks 0.363—0.365 p. c. alkaloid calculated as hyosciamine. [Apoth. Ztg., 15, p. 13.] *W. A. P.*

**The Volumetric Estimation of Bromides in Presence of Iodides and Chlorides.** — Julius v. Weszelszky presents a new volumetric method for

the estimation of bromide which is relatively simple and seems quite accurate, even in the presence of considerable amounts of chlorides, iodides and nitrites. The method is based upon one of L. W. Winkler for the estimation of iodides and can readily be combined with it, thus giving both iodides and bromides in the same substance. Winkler's method depends upon the oxidation of iodides to hydrogen iodate by chlorine in an acid solution ($2KI+Cl_2=2KCl+I_2$ and $I_2+5Cl_2+6H_2O=2HIO_3+10HCl$) while of bromine the bromide is set free and is ,along with excess of chlorine expelled by boiling. The iodate in the cold solution being liberated by addition of potassium iodide ($HIO_3+5HI=3I_2+3H_2O$) and titrated with standardized sodium thiosulphate, one-sixth of the iodide so found being that originally present.

The author now finds that, while bromine is not oxidized under the above conditions, the change to bromate is readily and completely effected if the solution is rendered alkaline and then an excess of chlorine water added ($KBr+6KOH+3Cl_2=KBrO_3+6KCl+3H_2O$). If the solution is now evaporated to dryness, the residue dissolved in water, slightly acidulated and potassium iodide added there will be liberated $I_6$ for every molecule of bromate formed, or one of bromide originally present. Methods of estimation for bromides and iodides, single or combined have been worked out. For details the original must be consulted.

[Ztschf. f. anal. Chem., 39, p. 81.] *W. A. P.*

**The Estimation of Sugar in Glycerin Soaps.**—Franz Freyer says that the so-called transparent glycerine soaps often contain no glycerin. Instead they contain 10—15 p. c. of cane sugar and thus withstand hot weather, while the real glycerin soaps are liable to exude glycerin. Invert sugar, dextrose and dextrin may also be present and should be tested for. For an examination the author dissolves 16.28 gm. in 50—100 cc. of water by heating on a water bath, then adds, with vigorous agitation a 10 p. c. barium chloride solution until the liquid no longer froths and then adds water to make a total of 260 cc. The precipitate is taken to represent 10 cc and the 250 cc. the weight of material taken. In the filtrate the sugars may be estimated by the usual methods.

[Oestr. Chem. Ztg., 3, p. 25; through Chem. Centrlbl., 71, 1, p. 693.] *W. A. P.*

**Standardization of Volumetric Acid with Iceland Spar.**—Orme Masson believes that Iceland Spar, on account of its purity, stability etc., is well adapted for the standardization of volumetric acid solutions. He gives the following directions for the standardization of hydrochloric acid with it. The Iceland spar is broken into pieces weighing 1—3 gm., washed in dilute acid to remove sharp point and adhering powder, then washed with water and dried at 100° C. One or several pieces are weighed, placed in a beaker

having a capacity of about 100 cc. and covered with a watch crystal and then exactly 20cc of the acid allowed to run in. The acid is allowed to react at ordinary temperature for 3—4 hours, then the liquid adhering to the cover and sides of the beaker rinsed down, again covered and the whole gently boiled for about one hour. The neutral calcium chloride solution is now decanted, the undissolved calc-spar washed with water, dried at 110° C. and weighed. From the loss of weight the strength of the acid is calculated.

[Chem. News, 81, p. 73.] *W. A. P.*

**Soluble Ferric Pyrophosphate.**—W. E. Ridenour offers the following modification for the detection of phosphate in soluble ferric pyrophosphate. Boil 1 gm. of the salt with 10 cc. of potassium or sodium hydroxide T. S. to remove the iron. Filter, acidulate the colorless filtrate with hydrochloric acid, and add a slight excess of ammonia water and a solution of magnesium sulphate (magnesium sulphate 10 gm., ammonium chloride 20 gm., water to make 120 cc.), so long as a precipitate is formed: slightly acidulate with acetic acid, boil and filter. The filtrate should give no precipitate upon adding ammonia water in slight excess.

For detecting pyrophosphate in soluble ferric phosphate the test should read: If 1 gm. of the salt be boiled with 10 cc. of potassium or sodium hydroxide T. S., a reddish-brown precipitate will be produced, and, if the colorless filtrate from this precipitate be acidulated with hydrochloric acid, then a slight excess of ammonia water added, and the solution of magnesium sulphate (above) added so long as a precipitate is formed, this precipitate should be completely soluble in acetic acid, added in slight excess, and not be reprecipitated on boiling.

[Am. Jour. Phar., 72, p. 125.] *W. A. P.*

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## Pharmacognosy.

**Seminase.**—E. Bourquelot and H. Hérissey consider that the ferment of leguminous seeds possessing a horny albumin, deviously prescribed by them, is a specific zymase, for which they suggest the name "seminase." They find that this ferment, precipitated from aqueous extracts of the seeds of fenugreek and of lucerne, differs from malt diastase in rapidly effecting the hydrolysis of the albumin of the locust bean, which diastase attacks but slowly, whereas seminase, on the other hand, is very much less active on starch paste than diastase. Even this action is probably due in great part to the trace of diastase which these seeds contain, as well as seminase. Since the cotyledons of both fenugreek and lucerne contain, during the first period of germination, considerable quantities of starch which ultimately disappear, it is evident that this small quantity of diastase plays an important part in the nutrition of the growing plant.

[Pharm. Journ., 1900, p. 277; from C. r., 130, p. 340.] *E. K.*

**Chemistry of Peppermint Oil.**—The formation of menthol and other constituents of peppermint oil during various stages in the development of the plant has been investigated by Eugène Charabot. The oils examined were derived from plants at three different stages of growth; the first as soon as the inflorescence appeared, and before the formation of flower buds, the second when flower buds were formed, the third when the flowers were fully expanded.

| | Before formation of flower buds. | After formation of flower buds | | Flowering plants. |
|---|---|---|---|---|
| | | a) leaves. | b) inflorescences. | |
| Sp. g. at 18° C..... | 0.9025 | 0.9016 | 0.9081 | 0.9200 |
| Opt. rot. at 18° C..... | −24° 10′ | −26° | −20° 15′ | −2° 37′ |
| Esters (as menthyl acetate)..... | 3.7 percent | 10.3 percent | 7.5 percent | 10.7 percent |
| Combined menthol..... | 2.9 " | 8.1 " | 5.9 " | 8.4 " |
| Free menthol..... | 44.3 " | 42.2 " | 29.9 " | 32.1 " |
| Total menthol..... | 47.2 " | 50.3 " | 35.8 " | 40.5 " |
| Menthone..... | 5.2 " | 4.2 " | 16.7 " | 10.2 " |

It will thus be seen that at the first stage the plant yields an oil rich in menthol, but containing a relatively small proportion of esters, and in which menthone is only present in small quantity; as, however, the development of the green parts of the plants progresses, the proportion of esters increases, and this etherification takes place in the leaves, for when the oil passes from them towards the inflorescences, it becomes less rich in esters. Menthone, however, would appear to be chiefly formed in the flowers, where it increases during the development of the inflorescences, while the proportion of the total menthol diminishes. It is concluded, therefore, that, as in the case of avender, etherification is confined to the chlorophyll-bearing parts, and that menthone is formed in the flowers by the oxidation of menthol.

[Pharm. Jour., 1900, p. 277; from C. r., 130, p. 518.] *E. K.*

**Tea Substitutes.**—In Russia the leaves of *Epilobium angustifolium* are largely used as a substitute for Chinese tea under the name of "Kaporie tea," the manufacture of which gives rise to a considerable industry in certain localities. The leaves of *Epilobium hirsutum* are also employed for the same purpose. The leaves of *Vaccinium arctostaphylos*, and sometimes of *A. myrtillus*, are similarly employed in the production of "Caucasus tea" or "Thé du Kutais." Both these fictitious teas and the genuine article are the subject of an exhaustive histological note by E. Collin in the Journ. de Pharm.

**The Solanaceous Alkaloids and Scopola Controversy.** *—The recent appearance of an article bearing on this very important subject by so able an

* A review of the subject by Professor V. Coblentz.

authority as Dr. Hesse[1] serves not only as a valuable contribution in clearing up this difficult and heretofore confused subject, but also some of the questions raised in the papers of Prof. Rusby and Mr. S. W. Williams[2] relative to the use of scopola rhizome for belladonna root in pharmaceutical preparations. Omitting all technical details, the most eminent authorities distribute these solanaceous alkaloids as follows:

The root[3] of the *Atropa belladonna* contains atropin and hyoscyamin, and although the proportions of these vary according to age, the latter is usually in large excess.

The *Hyoscyamus niger* contains chiefly hyoscyamin with very small quantities of atropin, also an alkaloid which Ladenburg named "hyoscin," the formula of which has lately been established as $C_{17}H_{21}NO_4$.

Scopola rhizome's total alkaloids consist of about nine-tenths hyoscyamin and atropin, the remaining one-tenth being an alkaloid which Dr. E. Schmidt isolated some years ago, naming it *scopolamin*. Hesse, after repeatedly examining the commercial scopolamin and this same base from scopola, has again called attention to the fact that it is not a uniform product, but a mixture of hyoscin and a very small amount of another base which he calls *atroscin*. This view of Dr. Hesse is corroborated by Dr. Louis Merck[4] (of E. Merck, Darmstadt). This atroscin was first discovered by Hesse in the commercial scopolamin hydrobromid, later in the scopola rhizome.

Commercially, in order to avoid misunderstandings where a change of title is apt to create confusion, manufacturers retain the title hyoscin for the base (amorphous) obtained from the hyoscyamus niger, while scopolamin (crystalline) has been retained for this mixture of hyoscin and atroscin from the scopola.

The question of the use of scopola rhizome in place of belladonna root would naturally resolve itself into a comparison of their active principles, qualitatively and quantitatively. The total quantitive yield of alkaloids of the former averages about 0.58 percent, while that of the latter is about 0.50 percent. Both of these plants contain as chief alkaloids hyoscyamin and atropin, the former being in large excess to the latter; according to Dr. Will (of E. Schering, Berlin), most of the atropin found in the total isolated alkaloids is formed during the process of extraction, hyoscyamin being then the parent alkaloid in these plants. The close relationship of these stereoisomeric alkaloids may be best illustrated in Dr. Hesse's statement that the hyoscyamin which is generally found in commercial atropin salts will, on

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1 Proceed. Am. Pharm. Assn., 1899, p. 293 et seq.

2 Liebig's Annalen, 309, pp. 75—95.

3 Although the leaf contains the same alkaloids, it is omitted from discussion here because of great variability.

4 Journal Society of Chemical Industry, 1897, p. 516.

standing, revert over into the atropin, however, if these alkaloids are present as gold salts, then the atropin goes over into hyoscyamin.

This explains the fact that pharmacologically the action of the two alkaloids is often indistinguishable. During the past ten years practically all of the atropin has been made from hyoscyamin, extracted from scopola rhizome, this conversion taking place readily through the action of heat or alkalies on its solution. No differences in medicinal effect or galenical preparations of these two drugs can be ascribed to these two alkaloids, should the one or the other predominate.

The next question that arises is, does the presence of this scopolamin of Schmidt or mixture of hyoscin and atroscin of Hesse contribute any new or different effect which would prevent scopola rhizome from replacing belladonna root in galenical preparations. Recently, Dr. Pinner, in an article in the Zeitschrift für Augenheilkunde, calls attention to the identity of the pharmacological effects of scopolamin (Hesse's hyoscin and atroscin) and atropin, and although they differ chemically, they may be used indiscriminately. This reference of Dr. Pinner, of course, relates to their applications in ophthalmology. According to Dr. Rahlmann, "scopolamin excels as a mydriatic and antiphlogistic all other tropeins in use, unlike atropin, it has no untoward after effects ..... the *anodyne* effect is not second to that of atropin." Even should scopolamin (hyoscin and atroscin) exhibit effects antagonistic to those of hyoscyamin or atropin when employed hypodermically, or in ophthalmology, it would not necessarily follow that scopola is a dangerous or undesirable drug when employed in galenicals or locally in the form of a plaster. It must also be borne in mind that this scopolamin contributes only as a very minute factor to the action of this drug, as it is only present to the extent of much less than one-tenth part of the total isolated aldaloids; even then, its local anodyne effect would seem to be desirable. When hypnotic action is desired, a salt of scopolamin should always be used in preference to hyoscyamin or any galenical preparation.

Considering these drugs, belladonna leaves, belladonna root and scopola rhizome (commercially known as belladonna scopola), their actual value is, in the opinion of the writer, inversely proportional to their market valuation.

Again, scopola rhizome, because of its greater constancy, qualitatively and quantitatively, in alkaloidal content, is to be preferred to belladonna root in securing preparations of a uniform standard. This was also the consensus of opinion among various European authorities whom the writer consulted while abroad last summer. Official recognition of scopola is certainly warranted by the facts, at least nine-tenths of its alkaloid being practically identical with that of belladonna, any difference in the case of the other tenth being rather desirable than otherwise.

[Pharm. Era, 1900.] *E. K.*

**Some West African Drugs.**—The drugs described below by J. S. Ward were obtained from an inhabitant of Sierra Leone and are used by the natives on the Gold Coast. In the description the manuscript accompanying the drugs was freely used, hence the peculiarity of the language.

**Akotompoteng.** This root is very useful in many diseases; it has a nice smell after it is preserved for a month or so. For cure of pain in the waist: Take or remove the skin of the root and grind same with a little pepper, guinea pepper, or guinea grains, and water; to be injected every three days. For bellyache: As above. For dysentery: Boil the roots with pepper and drink a tumblerful three times a day till relieved. For free bowels: Make an infusion of this with either rum, whiskey, schnapps, or gin, or any other spirit-liquor, and drink a few minutes before chop (food). For excess menses: Grind the peel of the root with guinea grains quite smooth, make it into a ball, dry it well, and put some into cornflour or any light chop, and eat it.

This root is probably from a species of *Xylopia;* it certainly is derived from a plant belonging to the N. O. *Anonaceae.* Mr. Cole informed Professor Scott Elliott that it is an astringent and styptic of great power and certain in activity. It will check bleeding when other remedies fail; it is a native specific for piles, and is useful in menorrhagia, epistaxis, hæmaturia, hæmatemesis and hæmoptysis.

**Toantin.** This root, as well as the leaves, are very useful, especially in disorder of the bowels and in diarrhœa; also for women as well as for men, in strengthening the system. As a tonic: Chew the root (the peel or bark), alone or with guinea grains, as much as you like or can, and swallow the juice. For coughing: Chew the inner bark in the same manner. For bitters: Macerate the root with guinea grains in rum, whiskey or schnapps for a week, and you make a nice bitters suitable for every liquor, which at the same time makes a tonic. Waist pain: Peel the root, grind it well with pepper, mix with so much water and inject, say, every morning for a week or so, according to constitution. For chronic sores: Scrape the root and grind it very well to powder with guinea pepper (not with water) very dry, and put it on the face of the sore after it is well cleaned, and it will cure it in a few days.

This is probably the "Tumardiahbah," which it much resembles, presented to the Museum by Messrs. T. Christy & Co., but which has not been identified.

**Ekum-Nkura.** The meaning of the name of this bark is "killing mice." Poison, especially for mice, when well ground and mixed with chop (food) for them. For swollen part of the body: Grind this well with water and rub over any swollen part; it will cure it. As smelling salts or sneezing powder, etc.: Grind this very well and smoothly, dry it well and make it into a very dry powder; put it into a dry phial well corked, and in case of one fainted put a little into the nostril of the patient to induce sneezing;

especially boys; after sneezing, he will be in his senses. As far as this bark is known, it does not kill a human being, but it makes them very dull; however, it is not advisable to use it internally.

This bark has not been identified, but a leaf sent with it is probably from a *Bauhinia*, N. O. *Leguminosae*. It is very peculiar and interesting. It sinks in water; this is caused by masses of a hard horny deposit in the corky layer. On incineration, this deposit leaves an ash consisting chiefly of lime. Exhausted with 90 percent alcohol, the tincture is red in color with a purple tint; evaporated, the residue is nearly entirely soluble in water. Sulphuric acid added to the aqueous solution throws out a reddish precipitate which is darkened in color, but not dissolved by ammonia. This alcoholic exhaustion shows no indication of alkaloid or glucoside. Extracted with benzolated amylic alcohol, the solution, shaken with acidulated water, gives a trace of alkaloid. On aqueous extraction, water removes coloring matter; sulphuric acid acts with it in the same manner as with the alcoholic exhaustion. This shows no reaction for alkaloid, neither does acidulated water or chloroform. Cells containing coloring matter run in distinct rows in the bark; between the color cells fibrous tissue occurs; prismatic cells in great abundance are interspersed through the whole structure, especially in rows alongside the lines of color cells; the intervals between the color rings are occupied by bast fibre and tissue. The masses of horny tissue of the corky layer are composed of stone cells. The seeds of *Chailletia toxicaria* are used as a rat poison in Sierra Leone, and are said to produce the same effect as strychnine. This plant is probably the bark in question.

**Nkokobesah, or Inconchery**. This root is very nice in smell and is sometimes used in making soups to diminish smell of fish or meats, such as herring or turtle, meats, etc., and otherwise used as medicine in many diseases. As an ingredient it is ground and put up into soups, such as sea turtle soup, to lessen its smell, and into fowl soup to increase its relish and render it more palatable; hence the first name, which means "fowls will finish." Tonic: Clean the root and chew it, swallow the juice; or grind the bark of the root very smooth, mix it with palm-wine and guinea grains well ground, strain it and drink. For cure of waist pain: Remove the bark from the root, grind same with pepper, guinea grains or guinea pepper, mix it with a pint or so of fresh water, strain it well and inject. Cure for weak men: It restores the weak system; if by one reason or the other one is weak, prescribe any of the foregoing, and the result will be found almost in every case successful. Bitters: Wash the root in water, cut it up, put it into a bottle with rum, gin, schnapps, whiskey, or any drinking spirit, and three days after commence to drink it, either alone or with any other spirit liquor.

The drug has not been identified.

**Adesekanchie**. This root and the bark have the same properties. They are very serviceable in many diseases. They are especially good for women

during pregnancy. For bellyache, waist pain, gout, etc.: Grind the bark of the tree or that of the root with pepper, mix with fresh water and inject every morning until relieved. Free bowels, etc.: The stick or the bark of the root is macerated in rum, gin or whiskey for one day; the resulting tincture is taken alone or in other alcoholic drinks. The tumbler or any glass vessel used with this medicine is to be quickly cleaned after its services are dispensed with, or it will stain it. For external pain: Grind the bark with guinea grains and lime, and apply to the affected part, and after half an hour it will be relieved. If burning during the application, it is advisable to remove the medicine; but do not cool the place by washing, or it will burn intensely.

*Sacrocephalus esculentus*, N. O. *Cinchonaceae*, is the plant yielding this drug and has been exported from West Africa as "peach root". It is understood to be the base of an African peach bitter sold in London. It is the Doundaké noted in the Pharm. Journ. [3], 15, p. 614, and 16, p. 49, and there described as an astringent and febrifuge capable of replacing cinchona bark. The authors of that paper finds that chloroform removes from the bark several bodies, one containing nitrogen of a resinoid nature and soluble in alcohol, the others being a mixture of wax and fatty bodies extracted with alcohol. The tincture was of an intense yellow color with a very pronounced green fluorescence. From this they were able to separate three bodies—one of a yellow-red color, very bitter, soluble in hot water and alcohol; another, yellow, insoluble in boiling water but soluble in alcohol; the third, brown, insipid, insoluble in boiling alcohol or water, but soluble in caustic potash. Both the first and second can be used to dye silk or linen and give, with indigo blue, fine shades of green. The *Sacrocephalus* is distributed widely in Africa, from Senegal to the Gaboon. In Sierra Leone the natives call the fruit the peach or fig of the country. The fruit eaten in excess acts as an emetic. The plant prefers the neighborhood of the sea coast, but it is also met with in the interior. The Doundaké bark on the coast of Africa is liable to be mixed with that of some species of Morinda, which it resembles, and is used for the same purposes.

**Yarney Crop.** This crop is used for many things and is almost good in all diseases, except dysentery or diarrhœa. Powder: Grind it smoothly, allow it to dry in its juice, after that grind it again. For fainted persons: Put a little of this powder into the patient's nostril, and if he or she sneezes there is hope for life or recovery and will be able to answer any question put. Purgative: Mix a little of this powder with an ounce or two of castor oil, with the juice of one lime, stir well before drinking, and it will purge almost instantly. If it is wanted to be used alone as a purgative, take a small part, and after well grinding mix with some water, strain and drink so many ounces according to constitution.

This is from a species of *Gladiolus*, probably the *spicatus*.

**Atsunobie Bark.** The use of this bark appears to be to check uterine hemorrhage. It is described as being very powerful, and a decoction with palm nuts is advised to reduce the astringency.

This bark contains a peculiar form of tannin. It has not been identified.

**Peyarebiasah.** This bark is very useful in many diseases, and almost everyone describes it differently in any disease. For consumption or cough: Boil the bark with or without pepper, guinea grains, or guinea pepper and drink (when cool), say, three times a day a tumblerful till relieved. It makes or induces coughing easy—that is, the phlegm or the mucus could easily be spat out.

**Bongbo.** This is a pod of the *Cassia sieberiana*. The tree producing it grows to a height of 30 ft. Gum from the bark and pounded fruits applied to open sores, which are said to cure in a remarkable manner.

[Pharm. Journ., 1900, p. 279.] *R. H. D.*

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## Practical Pharmacy.

**Acid Acetic** as a menstruum for the exhaustion of crude drugs has at this time become such a widely observed fact that it seems quite reasonable to assume that such a use of this agent has become established and will be generally recognized after all have tried and experimented with it. During the past year the list of drugs which have been thoroughly exhausted by this agent has very markedly increased, and it may be well to enumerate here those drugs which have been actually tried on a larger scale than experimentally. They are the following:

Aconite root,
Allspice,
Arnica root,
Belladonna leaf,
Belladonna root,
Black pepper,
Buchu,
Buckthorn,
Burdock,
Cannabis indica,
Capsicum,
Cascara sagrada,
Cascara sagrada arom.,
Cassia, Saigon,
Cardamom,
Celery, French,
Cimicifuga,
Cinnamon, Ceylon,
Cinchona, red,
Cinchona, yellow,
Cloves, Zanzibar,
Coca,
Colchicum seed,
Coriander,
Cypripedium,
Dandelion,
Digitalis,
Ergot,
Eucalyptus,
Garlic,
Gelsemium,
Gentian,
Gentian compound,
Ginger, Jamaica,
Hydrangea,
Hydrastic,
Hyoscyamus,
Ipecac,
Juniper,
Larkspur,
Leptandra,
Lobelia,
Mace,
Malt,
Marjoram,
Nutmeg,
Nux vomica,
Prickly ash,
Red pepper,
Rhatany,
Rhubarb,
Sanguinaria,
Sarsaparilla,
Sarsaparilla comp.,
Senega,
Senna,
Spigelia,
Squill,
Thyme,
Valerian,
Yellow Dock.

As far as can be now learned there have been only five so-called failures to accomplish the results expected in such exhaustion. These are to be considered only provisional failures, for it is expected that after more practice and experience some of these may be brought into line. The five drugs alluded to are: cubeb, cannabis indica, liquorice root, male fern and podophyllum. In the case of cannabis indica, it has been found that after many trials it may be thoroughly exhausted with a menstruum consisting of equal parts by weight of 60 percent acetic acid and officinal alcohol. The veterinarians are now using such an acetic fluid extract with a saving of more than 50 percent of alcohol and a corresponding reduction in price. With liquorice root, as was to be expected, the glycyrrhizin is thrown out when a 10 percent acetic acid is used and thus a finished product has not yet been obtained. In some of the finished acetic fluid extracts classed with those as being thoroughly exhausted by this agent, a few are unsightly when freshly prepared—such as conium, senega, wild cherry and some others, but they all considerably improve on standing, so that if they are allowed to settle for a few months they compare very favorably with the officinal fluid extracts which also require settling to make them appear to advantage.

By actual trial both in the hands of the veterinarians and the practicing physician, a fluid extract of colchicum seed made with acetic acid has been produced, which should bring it again into that prominence it has always deserved and which position it held in years past when the old *Acetum Colchici* was officinal.

A prominent reason for the failure of not only this older preparation, but all others under the head of *Aceta* was that they were gradually becoming less concentrated and weaker in the acetic acid used for their extraction, and therefore less efficient. This caused a gradual decline in their use and and finally they fell into actual disuse. This evidently should not have been permitted to occur, for an investigation into the case would have retained the whole class of preparations. Colchicum seed was a well-known and effective agent in the treatment of gout in the time of the *Acetum Colchici*, and when the alcoholic fluid extracts came into prominence it was found difficult to decide between an extract made from the root or from the seed on account of the uncertainty in the activity in the different parts of the plant. The officinal solid extract of colchicum is made from the root, and if it were possible always to secure sliced corms that were taken at the proper season, carefully dried, and not too old, there would be no doubt that the root would be the best material for an extract, but as the seed can only be taken at the proper season, and dries without risk of deterioration, its quality is much more easily adjusted and it must yield an extract that is more uniform in quality and strength. From clinical experience this is proved to be a correct deduction, but by the use of the officinal alcoholic menstruum the preparation has been made comparatively expensive and the exhaustion

has been somewhat incomplete. Thus the efficiency of the fluid preparation has not been restored to that of the older *Acetum Colchici*. After some experimentation by which the proper percent of acetic acid is found as a menstruum, these difficulties are so largely overcome in the Acetic fluid extract now presented that it is again well worth the attention of all practitioners, and if the experience of the veterinarians in particular be verified in general practice, this preparation surely ought to have a very prominent place again in the treatment of gout.

It has been remarked by more than one observer studying this subject how complete the exhaustion of nux vomica is with an acetic acid menstruum. It has long been a well-known fact that after as complete an exhaustion as practicable with the officinal alcoholic menstruum, a very decided bitterness remains in the mark, but with acetic acid the mark may be chewed quite indefinitely without producing the slightest bitter taste.

The advantages of acetic acid as a menstruum over alcohol alluded to here last year have not only been thoroughly verified, but the statements then made have been still more forcibly impressed upon those who have been working in this line. The following very broad statements or axioms may now be confidently laid down:

All the alkaloidal drugs are readily and thoroughly exhausted by this agent.

From a series of experiments now somewhat extended, acetic acid does not convert the alkaloids present into acetates, but acts simply as a solvent.*

As far as experiments now show, in 90 percent of those drugs which have been successfully exhausted, it is a better solvent than alcohol—producing an extraction more thoroughly representing the drug than was ever accomplished with the alcohol menstruum.

For the purpose of prescription writing, it is important to realize that all water soluble salts are soluble in acetic acid, and thus combinations of the acetic fluid extracts with the bromides, iodides, sulphates and chlorides can be accomplished and without danger of decomposition.

The older preparations which are favored by many (especially the older practitioners), such as the aceta, decoctions and infusions, can be safely prepared from the acetic fluid extracts.

After the experimental stage has been completed and sufficient time be allowed to offer a finished preparation by settling, the cost of the acetic fluid extracts will be found to be very much less than the officinal alcoholic preparations.

As another illustration of the advantage to be obtained by the substitution of acetic acid for some of the mineral acids in the already officinal preparations, it may be interesting to mention that an aromatic acetic acid has

* This statement is scarcely consistent with modern ideas of the theory of solution. There are other similar inconsistencies in the above, but we give these statements as they are as a matter of justice to the advocates of the use of acetic acid as a menstruum. *Ed.*

already been sufficiently tried to establish its superiority over the present officinal Aromatic Sulphuric Acid. This aromatic acetic acid is prepared simply by substituting 99.5 percent acetic acid for the sulphuric acid in the formula used in preparing the officinal preparation. A vegetable acid is undoubtedly less irritating and more beneficial to the alimentary tract than a mineral acid, and therefore it is claimed that this combination will prove useful in many cases. [Ephemeris, 1900, p. 2335.] *E. K.*

**Effervescing Citrate of Magnesium.**—Wilbur L. Scoville claims that nearly all of the so-called granular effervescent citrate of magnesium consist of an effervescent sulphate of magnesium or of sodium. He states that the objections to the official preparation are threefold: 1, it is not as nice appearing a preparation as its substitutes; 2, it costs several times as much, and 3, it is a difficult and tedious preparation to make. He discusses the method of preparation in full. The British Pharmacopœia now recognizes an effervescent magnesium sulphate and it is to be hoped that the forthcoming U. S. P. will do likewise.

[Am. Journ. Pharm., 72, p. 175.] *W. A. P.*

## New Remedies.

**Guaiacol-cacodylate** is another addition to the list of cacodylic acid preparations for the administration of arsenic. This preparation is intended as a stimulant in pulmonary tuberculosis and is to be injected subcutaneously in doses of 0.03—0.05 gm. (3—8 gr.).

[Bull. commercial, 1900; through Pharm. Zeitg., 45, p. 134.] *W. O. R.*

**Guaiamar** is obtained by acting upon water-free glycerin with guaiacol, $C_6H_4.OC_3H_7O_2.OCH_3$. It is a dry, white, crystalline, non-hygroscopic powder (m. p. 75° C.), having a bitter almond taste, and is readily soluble in alcohol, chloroform, ether, glycerin and water (1:20). It possesses antiseptic properties, liberating guaiacol in the presence of warm water. It is given in 0.2—1.0 gm. (3—15 gr.) doses three times a day. Preparations of hypophosphites, quinine and pepsin are also given with guaiamar.

[Nouv. Remèdes, 1900; through Pharm. Zeitg., 46, p. 116.] *W. O. R.*

**Dolomol** is a mixture of the calcium and magnesium salts of stearic and palmitic acids. It is a neutral, smooth powder and serves as a vehicle for the administration of numerous substances, especially sulphur, acetanilid, boric acid, calomel, resorcin, etc., in skin troubles.

[St. Louis Med. & Surg., Jour., 1899; through Apoth. Zeitg., 15, p. 127.] *W. O. R.*

**Monoiodo thymol** is prepared by acting upon thymol in a soda solution (sufficient to dissolve the thymol) with two equivalents of iodine. The preparation is administered either in powder or liquid form.

[Chem. Ind., 1900, p. 31; through Apoth. Zeitg., 15, p. 73.] *W. O. R.*

**Sicco** is a new name that has been applied to Schneider's dry haematogen, from which various liquid (syrup and wine) and solid (pill and powder) haematogen preparations are to be prepared.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 125.] *W. O. R.*

**Süssstoff-Sandoz** is a trade-marked title for benzoic acid sulfinid prepared according to a patented process.

[Ztschr. d. a. ö. Apoth. Ver., 54, p. 125.] *W. O. R.*

**Chielin** is a tulip bulb extract, to which is added 2 p. c. of starch. It is to be used as a skin preparation. Analyses as to combustible and ash content with details under each are given on p. 172 of the Ph. Zeitg.

[Pharm. Centrlhl., 41, p. 92.] *W. O. R.*

**Cassaripe** is an extract of cassava. It is recommended especially for the relief of inflammation of the conjunctiva.

[Nat. Drug., 30. p. 20. *W. O. R.*

**Osteogen** is a trade name for syrup of iron and calcium phosphates, containing 0.27 p. c. of the former, and 3.10 p. c. of the latter salt.

[Pharm. Zeitg., 46, p. 116.] *W. O. R.*

**Cyssatit** is a natural earth obtained from Auvergne, which has been pronounced to be identical with Kieselguhr by Darier.

[Bull. de pharm. de Lyon; through Pharm. Centrlhl., 41, p. 65.] *W. O. R.*

**Tenalgin** is a mixture containing the active principle of the areca nut (betel nut) and is used as a vermifuge (tape worms) in domestic animals.

[Rev. des med. nouv., 1900; through Pharm. Centrlhl., 41, p. 80.] *W. O. R.*

**Orthoform** does not always give the desired antiseptic properties when used alone. Luxemburger has compiled some of the general antiseptics which may and may not be used with orthoform.

Carbolic acid solutions (3—5 p. c.), lead water, solutions of lysol, kresol, boric and acetic acid solutions of magnesia do not affect orthoform. Solutions of zinc chloride, however, form double compounds with it.

Corrosive mercuric chloride solutions produce a slight turbidity with orthoform, and iodoform, thioform, dermatol, europhen, aristol, salicylic acid, mild mercurous chloride, ichthyol, oil of turpentine, tincture of iodine and solutions of copper sulphate do not effect or are not affected by orthoform. Bismuth subnitrate solutions in contact with orthoform, however, turn chocolate-brown in several days.

Potassium permanganate, silver nitrate and formaldehyde reduce orthoform, and so in addition with zinc chloride and bismuth subnitrate should not be mixed with it.

[Münch. med. Wchschr., 1900, p. 50; through Pharm. Centrlhl., 41, p. 75.] *W. O. R.*

# Literary.

## Books and Pamphlets Received.

Felix Alcan—Paris. Dictionnaire de Physiologie par Charles Richet. Troisième fascicule du tome IV, avec gravures dans le texte. pp. 310. 1900.

Verlag von Gebrüder Borntraeger—Berlin. Die mikroskopische Analyse der Drogenpulver. Ein Atlas für Apotheker, Drogisten und Studierende der Pharmacie von Ludwig Koch. Die Rinden und Hölzer. Erster Band, 1. Lieferung. pp. 74. 1900.

The Chemist and Druggist—London. Diary for 1900. One vol., pp. 644.

Author. The toxic action of a series of acids and their sodium salts on Lupinus Albus by R. H. True. Reprinted from the American Journal of Science, Vol. IX. Pamphlet, pp. 10. 1900.

Author. Action of picryl chloride on pyrocatechin in presence of alkalies, by H. W. Hillyer. Reprinted from the American Chemical Journal, Vol. XXIII. Pamphlet, pp. 3. 1900.

J. H. de Bussy—Amsterdam. Bulletin van het Koloniaal Museum te Haarlem No. 22, March 1900. Verslag over het jaar 1899, met Bijlagen. Pamphlet, pp. 74. 1900.

N. Y. Botanical Garden—New York. Bulletin, Vol. I, No. 5, pp. 295—449.

Phila. Commercial Museum—Philadelphia. Notes on Paraguay. Edited by Enrique Plate. Pamphlet, pp. 36. 1899.

H. P. Kilsey—Boston. Some information about the root "sang" or ginseng and cultural directions. Second edition. Leaflet, pp. 8. 1900. 10c.

## Reviews.

Missouri Botanical Garden. Eleventh Annual Report. St. Louis, Mo. Published by Board of Trustees, 1900.

The prosperity of the Missouri Botanical Garden, one of the richest botanical centers of America, is a matter of unquestionable

interest to plant-students and plant-lovers in this country. The report for this year will therefore give pleasure to many in its showing of perhaps unusual progress. The increased income from the property controlled by the trustees of the Garden has resulted in increased means of development. This, however, assumes small proportions in comparison with the additional income provided for by a recent decision of the Supreme Court of the state, permitting the sale of a considerable tract of land. This land is estimated, when improved, at a minimum of one million five hundred thousand dollars.

The account of receipts and disbursements shows that the herbarium and the library are well taken care of. Substantial growth in these departments is indicated. Among the collections the herbarium has received is one of nearly six thousand specimens, consisting largely of Vermont plants collected by Dr. Ferdinand Blanchard. From the estate of Dr. A. W. Chapman the Garden has received about eight thousand three hundred specimens, including the personal reference collection of the author. An early enlargement of the Garden, and, ultimately, an adequate representation of the North American Flora is planned. A proportionate increase in plant houses will also be made.

Judging by the number of visitors, the educational value of the Garden to the citizens of St. Louis seems to be appreciated. In the year 1899 a total of over seventy-one thousand persons was registered.

The Shaw School of Botany, having its seat at the Garden, offers facilities both for graduate and undergraduate work. In 1899 the degree of Doctor of Philosophy was conferred upon two persons whose work had been done in the laboratories of the School.

In addition to the report of the trustees and of the Director the following illustrated scientific papers appear:

a) A disease of *Taxodium distichum*, known as peckiness, also a similar disease of *Libocedrus decorrens*. Known as pin-rot, by Dr. Hermann von Schrenck.

b) *Agave expatriata* and other agaves flowering in the Washington Botanic Garden in 1898, by J. N. Rose.

c) A revision of the American species of *Euphorbia* of the section *Tithymalus* occurring north of Mexico, by J. B. S. Norton.

d) Revision of the species of *Saphotocarpus* of the United States; and a description of a new species of *Sagittaria*, by Jared G. Smith.

As usual, the report is fully and finely illustrated.

*Rodney H. True.*

DIE NATÜRLICHEN PFLANZENFAMILIEN nebst ihren Gattungen und wichtigeren Arten, insbesondere den Nutzpflanzen. Unter Mitwirkung zahlreicher hervorragender Fachgelehrten begründet von A. Engler und K. Prantl, fortgesetzt von Dr. Adolf Engler, Prof. der Botanik und Director des Botanischen Gartens in Berlin. Lief. 189 bis 194. Verlag von Wilhelm Engelmann in Leipzig. 1900.

Since the extended notice of this pre-eminent standard work in the June number (1899) of this Journal, several additional fascicles have been issued. All that remains to appear for the completion of the work are the concluding parts of the following cryptogamic families: Filicales, Sphenophyllales, Equisetales, Lycopodiales, Hepaticae, Lichenes, Musci, Fungi imperfecti, Schizophytae, Flagellatae, Basidiomycetes, Basidiolichenes.

All that has been said in the preceeding reviews on the excellence and supremacy of this comprehensive work, in every point also applies to the recently issued fascicles. It is gradually approaching its completion. *Fr. H.*

HAGER'S HANDBUCH DER PHARMACEUTISCHEN PRAXIS. Für Apotheker, Drogisten und Aerzte. Herausgegeben von Dr. B. Fischer in Breslau und Dr. C. Hartwich in Zürich. Erster Band, 1280 S. mit 278 Textabbildungen. Verlag von Julius Springer in Berlin. 1900.

Mit der Ausgabe der 10. Lieferung ist der erste Band dieses umfassenden encyclopaedischen Werkes innerhalb Jahresfrist vollendet. Den auf S. 135 und 583 des 17. Bandes dieser Zeitschrift enthaltenen Besprechungen desselben lässt sich nur noch hinzufügen, dass es die Aufgabe eines auf der Höhe des derzeitigen Wissens und Könnens stehenden Nachschlagewerkes vollauf erfüllt und die seit einer Generation erworbene massgebende Geltung voraussichtlich auch fortan behaupten wird.

Bei der Bearbeitung des umfassenden Materiales und der Beschreibung der Eigenschaften und Bestandtheile, der Darstellungs- und Prüfungsweisen aller in dem Arzneiwesen und vieler in der Technik und den Gewerben gebrauchten Mittel ist eine für die Praxis

zweckdienliche, möglichst präcise Diction eingehalten worden. Auch ist das reichhaltige, in den Bereich der merkantilen Nebenindustrie des Apothekers und Drogisten gehörende Material durchweg in Berücksichtigung gezogen. Dazu gehören vor allen die arzneilichen Specialitäten, welche trotz aller Gegenwehr mehr und mehr nicht nur volksthümlichen, sondern auch ärztlichen Zuspruch finden. Hierbei sind auch die gangbaren amerikanischen und englischen Specialitäten und Magistralformeln ziemlich vollständig herbeigezogen. Von diesen sind nur wenige übersehen worden, so unter anderem Brown's Bronchial Troches, Chlorodyne, Osgood's Cholagogne, Edison's Polyform. Unzutreffend ist die Formel für Sage's Catarrh Remedy (S. 522) angegeben; ebenso, und offenbar aus Unkenntniss oder Misstrauen, die wohlbekannte Darstellungsweise der unübertroffenen amerikanischen Kautschukpflaster (S. 1052). Deren Herstellung ist schon im J. 1887 im 5. Bande (S. 254) dieser Zeitschrift und fast gleichzeitig von Thomas Greenish im London Pharmaceutical Journal, sowie später mehrseitig beschrieben worden. Die Betriebsweise dieser sowie anderer Zweige der amerikanischen pharmaceutischen Grossindustrie steht bekanntlich nicht im Banne des in Europa vielfach waltenden Principes des Fabrikgeheimnisses. So stehen z. B. die grössten Fabriken der Herstellung der Kautschuk-Pflaster und des gesammten Verbandmateriales in East Orange und New Brunswig bei New York auch den Studirenden der ärztlichen und pharmaceutischen Fachschulen offen und werden regelmässig von den grossen Klassen derselben unter Führung der betreffenden Professoren besucht, wobei der gesammte Fabrikbetrieb von dem Abtheilungs-Dirigenten *ad oculos* demonstrirt wird.

Das Handbuch der pharmaceutischen Praxis findet eine nicht unerhebliche Abnahme auch auf dem nordamerikanischen Continente. Diese wird voraussichtlich nach wie vor fortbestehen, wenngleich die einheimische Fachliteratur auf allen Wissens- und Könnensgebieten einen immer grösseren und selbständigeren Aufschwung genommen hat und mit dem Emporkommen vortrefflicher beruflicher Kräfte und in dem Besitze einer grossartigen, das Beste leistenden Industrie schnell voranschreitet.

Druck, Ausstattung und Illustration des Werkes sind von der bekannten Solidität der Verlagsfirma. Der zweite, das Werk abschliessende Band soll im Laufe dieses Jahres in 10 weiteren Lieferungen fertig gestellt werden. *Fr. H.*

# SUPPLEMENT.

## Scientific Organizations.

**The Convention for the Revision of the Pharmacopœia** will meet in the Banquet Hall of THE RALEIGH, at Washington, D. C., May 2, 1900, at 12 o'clock noon.

**American Pharmaceutical Association.**—The forty-eighth annual meeting will be held at the Jefferson Hotel in the City of Richmond, Va., beginning May 7th, 1900.

The following program for the meeting has been adopted by the Council:

Monday, May 7, 10.00 A. M., Session of the Council; 3.00 P. M., First General Session; 8.30 P. M., Reception to Visitors.

Tuesday, May 8, 9.00 A. M., Second General Session; 12.00 M., Carriage Drive; 3.30 P. M., First Session of Section on Commercial Interests; 8.30 P. M., Concert.

Wednesday, May 9, 10.00 A. M., Second Session of Section on Commercial Interests; 3.30 P. M., First Session of Section on Scientific Papers; 8.00 P. M., Second Session of Section on Scientific Papers.

Thursday, May 10, 9.00 A. M., Trip to Old Point Comfort. via C. & O. R. R., returning about 7.00 P. M.

Friday, May 11, 9.00 A. M., Third Session of Section on Scientific Papers; 2.00 P. M., First Session of Section on Education and Legislation; 4.30 P. M., Trolley-car Ride; 8.30 P. M., Second Session of Section on Education and Legislation.

Saturday, May 12, 10.00 A. M., Third Session of Section on Education and Legislation; 3.00 P.M., Final General Session; 8.30 P. M., Roof Garden Entertainment.

**University of Strassburg.**—The sum of $45,000 has been allowed for the year 1900—1901 for the erection of a new home for the Pharmaceutical Institute at the University at Strassburg. The meagreness of the appropriation has caused some dissatisfaction on the part of German apothecaries, who see in it another set-back by the government. In most universities where more or less pharmaceutical instruction is given, the professor or more frequently assistant professor is attached to the chemical institute. Inasmuch as but few universities are provided with a pharmaceutical institute, it would seem that these might be supported somewhat more liberally. It will be remembered that Strassburg became German once more after the Franco-Prussian war and that the new imperial government exerted itself to push the reorganized Kaiser Wilhelms Universität to the foreground. The late Professor Flückiger was called to the directorship of the pharmaceutical institute, but had to contend himself with rather poor quarters. Now after practically all departments have been housed in new and elegant quarters, pharmacy is also to have a new home, but the new quarters are evidently not to be in accordance with the time of waiting.

**Society of German Naturalists and Physicians.**—This organization meets

at Aachen, Sept. 17—22, and will, therefore, be within easy reach of travelers from Paris to Germany. The first general session will be devoted to a review of the development of the natural sciences and of medicine during the past century. Four lectures on the subject have been planned. The first will review the history of the exact sciences, physics and chemistry and related branches and will be delivered by Professor van't Hoff of Berlin. Professor Hertwig, also of Berlin, will cover the same ground for the biological sciences. Professor Nauyn of Strassburg will take up inner medicine with bacteriology and hygiene; Professor Chiari of Prague pathological anatomy.

The Section Pharmacy and Pharmacognosy has been organized with Dr. J. Bongarty and Arnold Thelen as chairmen, and Dr. G. Koenig and Carl Sieberger as secretaries.

**Pharmaceutical Research in Great Britain.**—The Council of the Pharmaceutical Society of Great Britain has been approached by the General Medical Council to undertake such pharmaceutical research as is necessary for the revision of the Pharmacopœia. The nature of the work to be undertaken has not transpired, but there seems to be general gratification in England that the Pharmaceutical Council has been approached in the matter. At present there is no Research Laboratory in Bloomsbury Square, as the rooms which Professor Dunstan and his staff vacated when they migrated to the Imperial Institute are now used for other purposes. The Council may, therefore, consider it advisable to institute some such scheme of research as has been so successfully carried out in the United States—namely, to depute subjects to specialists in these subjects, either retail pharmacists, wholesale houses, or educational institutions—the work to be done at Bloomsbury Square being more in the nature of revision.

**A Maine Medico-Pharmacal Symposium.***—"It is not often that so pleasant a union of medical men and pharmacists occurs as took place at a recent meeting of the Maine Academy of Medicine and Science. If the two professions could be brought together more frequently under such favorable conditions the benefits that would come to both would be of immense value. In no other way is it possible for the members of the two professions to so quickly and perfectly understand each other's motives, or to see that at heart each is really seeking to work for the other's best interests. Both are thoroughly conscious of the fact that neither can get on well without the other. The supposed antagonism of interests which we hear so frequently about is almost wholly the outcome of misunderstandings of facts, or is due to failure to appreciate the difficulties under which each is forced to labor at the points where their respective functions naturally are compelled to anastomose. Once let each distinctly understand what is and what is not possible of accomplishment, and harmony will of necessity follow.

At the meeting in Portland, Maine, to which we refer, five papers were read in the Section on Materia Medica, which bore directly on the interests of both professions. Three of them were by pharmacists, and two by physicians."

* From Merck's Report.

## Commercial.

**The Commerce of Drugs.** *—There is a scarcity of some drugs, at irregular intervals, in the European market, which probably arises from various causes, but chiefly from the keen competition in trade, which leads buyers to purchase at as low a rate as possible. This may be illustrated by some facts in connection with some of the drugs that have recently been scarce or high priced. Genuine leaves of *Pilocarpus jaborandi* are at the present moment so scarce that it is probable that it would be almost impossible to purchase 1 cwt. of them in London, although there would not be a similar difficulty about the Rio Janeiro drug (*Pilocarpus selloanus*) or the Maranham drug (*Pilocarpus microphyllus*). The reason of this appears to be that the last time genuine jaborandi became scarce and dear, not only were large supplies of it shipped to England, but the other varieties were also sent over in abundance, and as a cheaper price was asked for them, and the leaves of genuine and the Rio Janeiro kind are much alike in size and appearance, and buyers have not always a knowledge of pharmacognosy, the cheaper drug was largely bought by wholesale dealers. The small leaf was also bought by makers of pilocarpine, chiefly for Germany, it having been discovered in that country that *P. microphyllus* afforded a remunerative yield of the alkaloid, and that it paid better, owing to its low price, to manufacture the alkaloid from these leaves than from the genuine kind. Consequently the genuine drug became "a drug in the market," and, as it would not pay the merchants who held it to go to the expense of warehousing it until the existing stock in the possession of wholesale druggists was exhausted, it had to be sold for what it would fetch, which was 4½ d. per lb., whereas the drug cost at least 9 d. to collect and send to Liverpool. The result is that shippers, finding that they only lost money over the drug, will not now send it unless they have a certainty of not losing by it. There is little doubt that if 1 s. per lb. was offered for a definite quantity it could easily be procured from Pernambuco. The plant being tolerably hardy in subtropical climates, there is little doubt that after a time the cultivated leaves will be placed in the market if a price can be obtained for regular but limited supplies. The difficulty in this case, as in many others, is that, owing to absence of means of communication between producer and consumer and want of trade agencies to limit the output, the market is flooded when drugs become scarce.

* E. S. Holmes in the Pharm. Journ.

Strophanthus. It is not at the present moment possible to obtain pure seed giving the characters described in the Pharmacopœia. In this case the difficulty is due partly to the ignorance or carelessness of the first exporters and partly to their attempt to create a monopoly. The first exporters of the drug from Nyassa Land, thinking, apparently, that all strophanthus seed possessed the same properties, or finding only a limited amount of the genuine Kombe seed, adopted the practice of sending three varieties of seed from different districts in the same country, and from three different species, but all of these seeds are very similar in size and color and not distinguishable by ordinary observers. One of

these species, *S. emini*, has soft, velvety leaves, and flowers very like those of *S. kombe*, but the pod is quite distinct, having a dense, woolly coat. Another, *S. courmontii*, has flowers which do not possess the curious long-tailed petals which form so striking a feature in the other two, and, moreover, has smooth leaves, whilst those of *S. kombe* have stiff hairs. The mixture was detected by the fact that whilst the seeds of *S. kombe* give a green color, those of the other two species give a pink or reddish color with strong sulphuric acid. At first the seed was exported in pods, but subsequently the loose seed was shipped, the seeds being freed from pods and awns by native girls employed for the purpose, and the different seeds once mixed cannot possibly be separated. The exporters attempted to secure a monopoly by keeping botanists in this country in ignorance of the exact plant which yields the drug, with the natural result that the high price of the drug led to competition, and seeds of other species were imported from West Africa at a cheaper rate. But different species of strophanthus, like different species of aconite, vary much in potency, and when it was found that in some cases teaspoonful doses of the tincture produced no poisonous effect, whilst in others a few drops produced the desired effect, medical men lost confidence in the drug, and the demand has very considerably fallen off. Attempts are now being made to obtain a uniform product in commerce, and the East African exporters have promised a definite brand in future of one kind of seed alone, which it may be hoped will reinstate this valuable drug in favor.

The present state of the market is, therefore, due in this case partly to the attempts to lower the price by importation of a cheaper article, and partly to the ignorance of the producer.

ACONITE ROOT. Until some years ago German aconite root formed the staple article in commerce. Then Japanese aconite appeared in the market in the form of a carefully prepared drug of good quality, but as it appeared to the taste more powerful than the German, many wholesale firms hesitated to use it for tincture, although the price was lower than the German. The lowering in price of the German root led to very careless collection and preparation of the drug and to the adoption in the British Pharmacopœia of the root cultivated in England and collected when at its best. But a drug so cultivated and carefully dried had to meet with the competition of the German and Japanese drugs, and the low price of these was utilized to lessen the price of the English article. As the grower must of necessity know what stock to grow, which he must judge from the sales he can effect, the result of beating down the price is a less acreage under cultivation and an increase in the price of the drug in consequence. Thus, three years' sales of the English drug at 6 d., 1 s. and 1 s. 6 d. per lb. respectively indicate that the average (1 s. per lb.) is the price which it would pay the grower to produce it. It must be remembered that, apart from the rent of land and the expense of drying, 4 lb of root yield only 1 lb. of dried root, and that, much of the root being small, it takes 4 lb. or 5 lb. of fresh root to yield 1 lb. of root of uniform size and mature growth.

# Pharmaceutical Review.

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## Editorial.

The eighth decennial **Convention for Revising the United States Pharmacopœia** met at Washington May 2, 3, and 4. The following business was transacted by the Convention:

1. Organization was perpetuated by the election of new officers and by instructing the President to issue a call for another meeting to be held in 1910.

2. Organization was perfected by adopting a constitution and by-laws and by making the Convention a corporate body.

3. In accordance with the newly adopted constitution a council of seven members was created, consisting of five persons especially elected for this purpose, and of the President of the Convention and the Chairman of the Committee of Revision, both *ex officio*. This council is to have charge of the business affairs of the Convention.

4. Likewise in compliance with the statutory instructions, a Committee of Revision, with a membership of twenty-five, was elected.

5. General instructions were given to the Committee of Revision to guide it in its work.

After several disputes in matters of representation were settled, the President of the Convention, Dr. Horatio C. Wood, read a very able address which will be printed with the proceedings of the Convention. By the adoption of the new constitution it is hoped that many of the past irregularities will be done away with and that less time will be lost by wrangling delegates and would-be delegates. If, as was pointed out by the Chairman, the original call was issued in strict accord with the instructions of the 1890 Convention and editors changed the call to suit themselves, it certainly was the duty of the

officers of the Convention to call attention to these irregularities and thus to prevent, as much as possible, waste of time and unpleasant feeling at the Convention. It is but natural that a delegation that has been elected in accordance with instructions as received —even if modified by some arbitrary editor—and has traveled some distance to take part in the Convention, feels disappointed, to say the least, if it finds the doors closed and has to pray for admission.

The new constitution admits only delegates from incorporated state associations—not local associations—and incorporated colleges. This is a great improvement over the past regulations, yet it does not procure representation which is geographically adequate. Unless the writer is greatly mistaken, all of the country west of the Mississipi, omitting the City of St. Louis, was represented by as few as five delegates. Several states of the old Northwest were none too well represented, and more than one southern state not at all. It is certainly desirable to have as large a representation as possible at these decennial conventions. It may, therefore, not be wise to reduce numerically the influence of the Eastern states which have the great advantage of nearness to Washington. It may be well, however, to carefully consider the question of paying mileage to two representatives, one medical and one pharmaceutical, from each state in order that the large and growing West may be represented more adequately in the future. It is not necessary to wait for the sitting of the next Convention to bring about such reform. If the next edition of the Pharmacopœia will be as successful financially as the seventh, it ought to be within the power of the Council to vote the necessary funds for this purpose. The question of better geographical representation is one that deserves the careful consideration of all concerned, particularly of the western state pharmaceutical and medical associations.

The financial success of the 1890 Pharmacopœia has made the separation of business matters from the duties of the Revision Committee seem highly desirable. For this reason the Council, consisting principally of men of ripe business experience, was elected. Every one present seemed to regard this new departure, which was made in accordance with the recommendation of the President, as very desirable. It was exceedingly unfortunate, therefore, that the originator of this executive branch should have forgotten himself to the extent of abusing the men elected because they were business men

rather than professional men. The cant of professional ethics at times makes the careful observer think of some scathing remarks that were once uttered about whitewashed sepulchres, etc. We certainly honor a man for having the courage of his convictions, and more still for having the courage to apologize for having said unpleasant things in the heat of debate. The above remarks are, therefore, not intended to convey personal criticism, but of what seems to the writer a false foundation for any ethical superstructure. We fear, however, that it will require a kind of moral "French Revolution" to brush away the mental and ethical cobwebs that have been allowed to remain undisturbed in the historic vaults of psychic evolution.

Although Dr. Chas. Rice had expressed his desire to be relieved of the duties of Chairman of the Revision Committee, he was unanimously reelected. The feeling that it would be well-nigh impossible to fill his place was quite general, and it is to be hoped that he may recover his health sufficiently to take an active part in the work of revision.

The general instructions to the new Committee of Revision drafted by the old committee and modified in some particulars by the Convention are as follows:

### 1. Scope of the Pharmacopœia.

The Committee of Revision is authorized to admit into the Pharmacopœia any product of nature of known origin; also any synthesized product of definite composition which is in common use by the medical profession, the identity, purity, or strength of which can be determined. No compound or mixture shall be introduced if the composition or mode of manufacture thereof be kept secret, or if it be controlled by unlimited proprietary or patent rights.

### 2. Doses.

After each pharmacopœial article (drug, chemical, or preparation) which is used or likely to be used internally or hypodermically, the committee is instructed to state the average approximate (but neither a minimum nor a maximum) dose for adults, and, where deemed advisable, also for children, the metric system to be used and the approximate equivalent in ordinary weight or measures inserted in parenthesis. It is to be distinctly understood that neither this Convention nor the Committee of Revision created by it intends to have

these doses regarded as obligatory on the physician or as forbidding him to exceed them whenever in his judgment this seems advisable. The committee is directed to make a distinct declaration to this effect in some prominent place in the new Pharmacopœia.

### 3. Nomenclature.

It is recommended that changes in the titles of articles at present official be made only for the purpose of insuring greater accuracy, or safety in dispensing. In the case of newly admitted articles, it is recommended that such titles be chosen as are in harmony with general usage and convenient for prescribing; but in the case of chemicals of a definite composition a scientific name should be given at least as a synonym.

### 4. Assay Processes.

The committee is instructed to append assay processes to as many of the potent drugs and preparations made therefrom as may be found possible, provided that the processes of assay are reasonably simple (both as to methods and apparatus required) and lead to fairly uniform results in different hands. As regards the products of such assays, tests of identity and purity should be added wherever feasible. Physiological tests for determining strength should not be introduced by the committee.

### 5. Purity and Strength of Pharmacopœial Articles.

The committee is instructed to revise as carefully as possible the limits of purity and strength of the pharmacopœial chemicals and preparations for which limiting tests are given. While no concession should be made towards a diminution of medicinal value, allowance should be made for unavoidable, innocuous impurities or variations due to the particular source or mode of preparation, or to the keeping qualities of the several articles. In the case of natural products the limits of admissible impurities should be placed high enough to exclude any that would not be accepted by other countries.

Regarding the strength of diluted acids, tinctures and galenical preparations in general, it is recommended that the committee keep in view the desirability of at least a gradual approach upon mutual concessions towards uniformity with similar preparations of other pharmacopœias, particularly in the case of potent remedies which are in general use among civilized nations.

### 6. General Formulæ.

It is recommended that general formulæ be introduced, as far as the particular nature of the several drugs will permit, for fluid extracts, tinctures, and such other preparations as are made by identical processes, and that the general formula to be followed in each case be merely indicated by reference.

### 7. Weights and Measures.*

The committee is instructed to retain the metric system of weights and measures as adopted in the Seventh Decennial Revision.

### 8. Supplement.

That the Committee of Revision be authorized to prepare a supplement to the Pharmacopœia at any time they may deem such action desirable.

### 9. Precedents.

In all matters not specially provided for in these "General Principles" the rules established for previous revision, if there are any, should be followed.

Special attention may be called to the introduction of doses and of patented products, also to the reintroduction of the apothecaries' weights and measures as far as doses are concerned. Of a negative character are the refusal to admit the introduction of serums and of physiological testing. It would appear that the Convention, having admitted patented articles, was afraid to go any farther at the present time. Another ten years of education will no doubt clear the atmosphere in this regard as it had done to patents. A resolution favoring the introduction of microscopic tests for powdered drugs met with a similar fate as did serums on physiological testing. One other important feature of these instructions is the authorization to issue a supplement to the Pharmacopœia when necessary. This provision will not only hasten the revision of the present work, but will undoubtedly assist materially in widening the scope and increasing the usefulness of our present national standard.

The writer cannot refrain from commenting on what may appear to many a trivial matter, i. e. the exceedingly poor taste that was displayed in the use of titles and degrees. If any "littleness of spirit" was displayed at the Convention it was not so much on the part of

* The Chairman ruled that this section does not conflict with the provision of the use of the apothecaries' weights in connection with doses. *Ed.*

our "business" friends, but on the part of our professional confrères whose M. D. cropped out at the slightest provocation. One of them, when introduced as Mister. remarked that he could not understand why his friends insisted on introducing him as Mr. so and so, his name was Dr. so and so. Verily, the "professional spirit" seems to engender a false idea of the standard of a gentleman.

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Attention was directed last month to a circular that had been sent to colleges and schools of pharmacy for the purpose of effecting an organization of these institutions. While we welcomed such an organization, we expressed the hope that no attempt would be made to use such an organization for purposes of coercion. An organization of this kind can accomplish much by friendly discussion. The way in which medical colleges live up to the regulation course on paper while violating the very spirit of these regulations certainly ought to teach us to be slow in making the actions of any association binding on its members.

Realizing the advantages to be gained by bringing together those specially interested in pharmaceutical education, and also aware of the possibility of absolute failure by attempting too much, the delegates from the various colleges represented at the Richmond meeting of the American Pharmaceutical Association resolved to organize into an **American Conference of Pharmaceutical Faculties.** The name of the organization thus becomes indicative of its avowed purpose, viz. "to promote the interests of pharmaceutical education" in the broadest possible manner in which this phrase can be interpreted.

No hard and fast line is to be drawn as to membership. Faculties desiring to be admitted must provide such information as the Executive Committee shall demand and must receive a three-fourths vote of the conference. That those who happened to be at Richmond mean perfectly fair play is amply demonstrated by the proviso that the faculties included in the temporary organization shall next year be subject to ratification "by the same vote as is required for the election of new members."

The substitution of the word faculties for colleges and schools in the name of the organization is not to be construed as an intention to exclude persons who are interested in pharmaceutical education, but who do not occupy a chair at a college or school. Although

each faculty is entitled to but one vote, it can send as many delegates as it pleases, and it may send as delegates whomsoever it pleases. All delegates are to have the "right to engage in debate upon any question."

The veteran of pharmaceutical teachers, Professor Albert B. Prescott of Ann Arbor, representing the oldest university school, was elected President; Professor Joseph P. Remington, Dean of the oldest college of pharmacy, was elected Vice President; the secretaryship went to Washington, and the members of the Executive Committee were chosen largely with regard to geographic distribution of the institutions represented. The Conference seems to have been organized under very favorable auspices. Let us hope that the best expectations of those who entered upon the new work may be realized. Applications for membership should be addreseed to Professor J. H. Beal of Scio, Ohio, who is Chairman of the Executive Committee.

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After a lapse of 27 years the **American Pharmaceutical Association** has once more met in Richmond. Many members left their homes with some misgivings as to attendance and nature of the work that would be accomplished, but most of these departed from Richmond with the feeling that not only had the hospitable people of this southern city made their stay exceedingly pleasant, but that the sessions, formal and informal, had been profitable as well. It was true that only eight months had intervened since the meeting at Put-in-Bay, also that the time of meeting proved inconvenient to many a retail druggist and college professor alike. The fact that in spite of these disadvantages the attendance proved as good as it was, shows what a hold the American Pharmaceutical Association has on its members.

The value of our annual gatherings is not to be measured wholly by the numbers in attendance nor by the number of papers read or by the striking character of a few of them. As a matter of fact, the importance of a gathering cannot well be estimated at the time of meeting or immediately thereafter. We may, at the time, be unduly impressed with the importance and what we suppose to be the far reaching character of a paper or transaction, while a less attractive measure may bring unexpected permanent results. The one great advantage of such gatherings is the coming together of men and women from all parts of the Union. A feeling of fellowship fostered

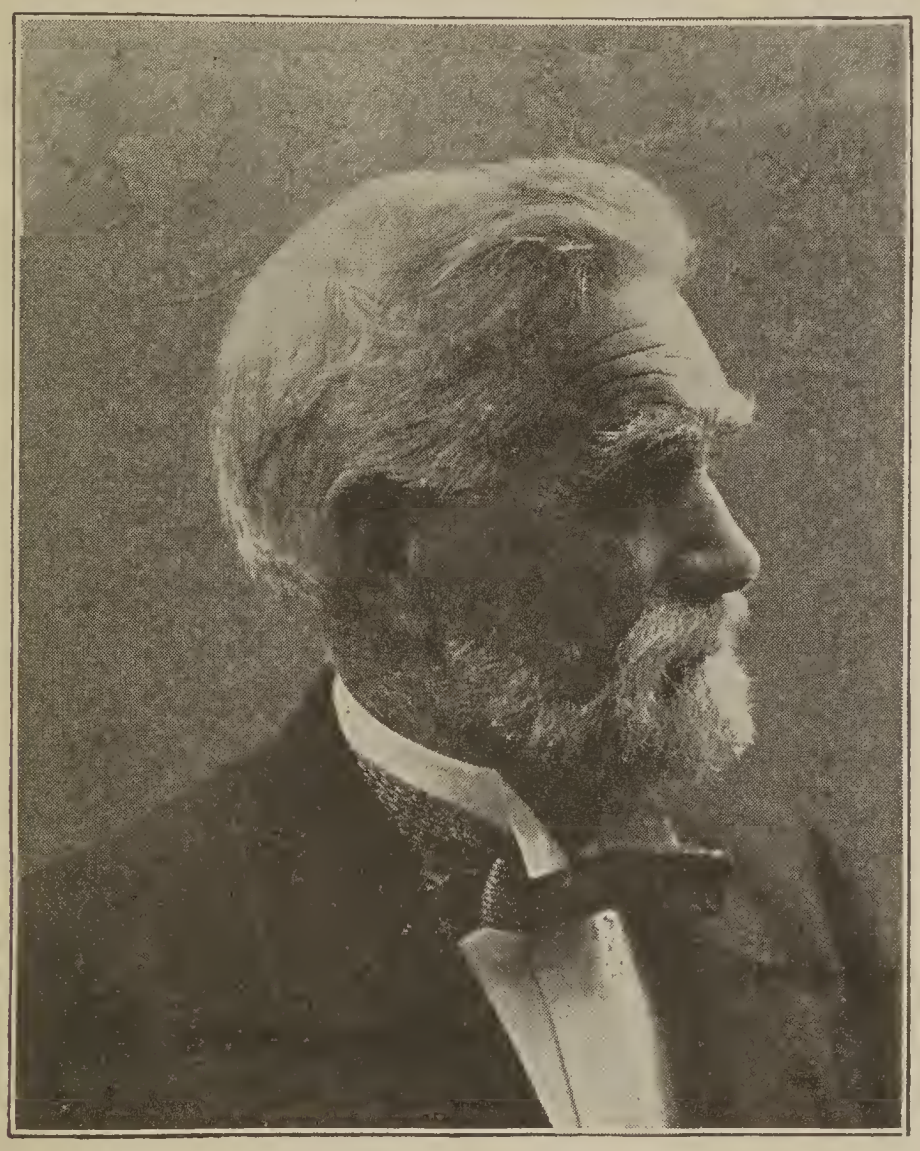
by mere association, an exchange of opinion must result in great good in the end. Even where closer contact causes disappointment, the effect may be regarded as beneficial inasmuch as it sets persons and events in their proper light.

This year's meeting has not only served the purpose of bringing together a fair number of members of the American Pharmaceutical Association as such, but has given those who are specially interested in educational matters an opportunity to organize more closely into a Conference of Pharmaceutical Faculties. Members of several state boards of pharmacy also met although no special organization was effected. If the movement on foot to cause the National Association of Retail Druggists to meet at the same time and place with the A. Ph. A. prove successful, there will be several affiliated interests centered about the oldest association soon to celebrate its semi-centennial. Unless the tendency of decentralization should prove too strong, as manifested e. g. in the American Association for the Advancement of Science and its host of affiliated organizations, this new movement ought to prove a means of strengthening all pharmaceutical interests involved.

In a time when all sorts of schemes are ripe, the effect of a calm, sober review of pharmaceutical activities proper by the President of the Association had a wholesome effect. So many druggists have sold their birth-right and then complain about the inflexible laws of social and economic evolution, that to be reminded of the proper lines of pharmaceutical development is exceedingly opportune. Indeed, it was very noticeable in the sessions of the sections as well, that thinking pharmacists are beginning to realize more and more that, after all sorts of schemes in commercial side lines etc. have been tried and largely proven failures, the time is ripe to demand a higher professional standard based on a more thorough scientific and technical, yea even commercial education and training.

The one discouraging feature was the falling off in membership to which attention was called. The financial standing of the Association is fair as shown by the report on another page prepared by the Treasurer. We have been extravagant both in taking in new members, and in our expenses. It is gratifying, however, that several lessons have been learned. The report of the Secretary of the Council showed that almost all of the persons elected at Put-in-Bay completed their membership, a very gratifying result indeed. At the Richmond

meeting one hundred and twenty-four new members were elected. It seems wise, on the whole, that St. Louis rather than some place in Texas was selected as the place of the next meeting. What we want, first of all, is to hold our older members by giving them an opportunity to attend the meetings. A trip to Texas with excursions to Mexico are tempting indeed, but it will be better for the Association to have a good attendance of the Central West next year.



**A. B. Prescott of Ann Arbor.**
President of the Richmond meeting.

Exhibits are to be reinstated on a somewhat different plan so as to avoid abuses and detraction from the regular session. A Section on Practical Pharmacy and Dispensing has been organized which likewise ought to serve to make the pharmaceutical practitioner take a greater interest in the doings of the Association. In this connection it may not be amiss to call attention to the use of titles on the floor of the Association. They have been eliminated from the printed proceedings, but not from the oral discussions. Fortunately little of the

poor taste, displayed at the Convention for the Revision of the Pharmacopœia at Washington, is to be found on the floor of the A. Ph. A., however, there is room for improvement. As Chairman of the Scientific Section at the Baltimore meeting, the writer used Mister as the only form of address. He has not only not been censured, but commended for this. Retail druggists have often given as excuse that the A. Ph. A. was not a true representative body, but was being run by the college professor and manufacturer. This assertion is made principally by those who hear and read what Professor so and so and Dr. so and so said at the meetings. It certainly could do no harm and in all probability would result in some good to do away with all titles in our form of address at least. As a matter of fact it is stated that a resolution to this effect was passed a number of years ago, but has evidently been forgotten.

At the Put-in-Bay meeting last September, the **Commercial Section** elected a "college professor" as chairman after having been deserted by its officers who were "practical druggists". The sessions of the section were very well attended and Professor Good would undoubtedly have been reelected had he accepted the nomination. We may be permitted to quote a short paragraph from his address, namely the following:

"As to our critics, who assert and complain that this association is "run" by the professors in colleges of pharmacy, we repeat that the co-operation of all has always been invited. It has been solicited. To stay at home and find fault with what others do, is not creditable. To take hold and help to mould the policy of an organization is much more so. Unless there be a commercial side to pharmacy the professors will soon be without students to instruct."

The number of papers read was but small. One of the principal features of the meetings of this section was the informal talk on the utility and direct advantage of including a commercial course of lectures in the curriculum of a college of pharmacy by Mr. Ryan. He outlined the course which he had given during the past winter at the Philadelphia College of Pharmacy. The plans outlined were received with much favor.

The other was the report on Practical Pharmacy and Dispensing. Mr. Hynson, the chairman of the committee, has been doing good work in spite of the indifference displayed for two years by the practicing pharmacists to whom he has appealed. These reports

would be more valuable if less verbose, but every one seemed willing to forgive verbosity for the sake of the good missionary work that the author of the report has been doing. Although the work seems to be little appreciated by his confreres, Mr. Hynsons labors in their behalf were rewarded by the Association by the establishment of a Section on Practical Pharmacy and Dispensing and by his election as the first chairman of the newly created section.

As usual the **Scientific Section** had the largest number of papers. Quality and quantity of work were creditable when compared with the work accomplished by similar associations in Europe.

The papers were well grouped, thus admitting of rational and liberal discussion within a minimum space of time. The report of the Special Committee on Research made its usual report and was continued, although as in previous years the committee did not accomplish anything that its members would not have done as individuals. It seems extremely doubtful whether it ever will without liberal funds at its disposal.

The principal feature of the **Section on Education and Legislation** was the discussion of the "Model Law" prepared by Professor Beal, who had been appointed a special committee for that purpose at the last meeting of the Association. This bill was read by sections, and the discussion filled the remainder of the afternoon session and was prolonged until a late hour Friday night. For the sake of expediting the matter, the various amendments as adopted were referred to a special committee of five, consisting of Messrs. Sheppard, Oldberg, Hallberg, England, and Beal, with instructions to incorporate the adopted amendments in the law and report the same at the morning session on Saturday.

The draft as reported back by the revision committee at the Saturday morning session was adopted with but little discussion, and by a unanimous vote.

In all essential particulars the draft remains as it was when presented to the Association. Beside the correction of typographical errors and a few unimportant changes in verbiage, the only modifications of the draft being as follows:*

"The word 'own' was introduced into the first section, making it unlawful for any one not a registered pharmacist to own a drug store

* The editor is indebted to Professor Beal for the following statement of changes made by the Assn.

This modification, while proper enough in principle, is not likely to meet with much favor from courts or legislatures, and we fear that its presence will materially interfere with the rapid adoption of the law.

"The law is also changed so as to require from candidates for registration a satisfactory preliminary general education, and also so as to permit the board of pharmacy to employ the assistance of experts in the conducting of examinations.

"Section Six was modified so that any person failing to renew his registration within a certain period may be restored to registration upon payment of the original fee, instead of being required to undergo a second examination. A clause was added to the same section requiring the name of the responsible manager of every pharmacy or drug store to be conspicuously displayed upon the outside of the place of business.

"Section Seven was amended so as to require members of the board of pharmacy to be actively engaged in business. The renewal fees required in Section Twelve were reduced one-half.

"The last half of Section Fifteen was stricken out, so that the Section as it now stands forbids the peddling or hawking of patent medicines in the street or from house to house. The original section permitted such sale upon payment of an annual license fee of $100.00.

"Section Fourteen of the draft, which required pharmacists to preserve the original of every prescription, was the occasion of a very lively debate. By a close vote the section was at first stricken from the draft, but being unanimously reported back by the committee of revision, was finally adopted by the Section by unanimous vote."

The business relating to the Model Law was wound up by a vote of thanks to its author, and by a resolution providing for a special committee of three to bring the amended model to the attention of boards of pharmacy and pharmaceutical associations, and to urge upon these bodies the importance of securing the adoption of at least the principal features of the draft in the various states.

# The Use of Kava by the Samoan Islanders.*

By *C. G. Lloyd.*

The natives of Samoa do not use any form of alcoholic beverage, but they make a drink from a native root called Kava.[1] In the Pharmaceutical Review, February, 1896, is an article on this drink incorrect in a few minor particulars.[2]

It is customary when a visitor calls at a native Samoan house to at once make for him a bowl of Kava, and should it happen that they have no root in the house they will apologize the first thing. I drank Kava probably two or three times a day on an average during my ten weeks stay on the island and I did not notice that it had any effect whatever on me. Taken in excess it will make the legs "drunk" though it has no effect on the brain. At least so I was told, I saw no one under its influence and the natives certainly do not use it to excess, and had I not read that it was an "intoxicating drink" I would never have known it from my experience or observation.

Kava is the root of a cultivated plant (*Piper methysticum*). While it is a native of the Pacific Islands it does not grow wild in Samoa, and owing to its having been largely dug during the last war it was very rarely I saw it growing. The plant is a large "shrub"

* Mr. Curtis G. Lloyd, whose recent visit to Samoa added another to his annual journeys in search of scientific information, has written an interesting account of his visit, which he has contributed to the Sunday Commercial Tribune. He left Cincinnati November 23, 1899, spent ten weeks with the natives of the islands, and reached Cincinnati again March 21, 1900. The purpose of his journey was to study the people in their village homes, with their native surroundings, to make studies and photographs of the fungi of the island and to add to his collection of dried specimens. Mr. Lloyd went at once to the village ruler, Saipaia, a leading chief of the island, and was his guest, living with the people in their rude homes, studying their habits and customs under the most favorable circumstances possible, and pursuing his quest of fungi as opportunity afforded. During his stay he took 120 excellent photographs and is having them finished to preserve the record of his journey in the artistic way that has been his custom in connection with all his trips.

[1] The pure Samoan word is Ava, but they say Kava now more than Ava. The Samoan language is becoming corrupted from the Tongan, especially in the use of the sound K not originally heard in Samoa, but now frequently used especially as a substitute for T, as Kofa "farewell" instead of Tofa.

[2] In looking up the subject of Kava, I noticed an article in the Pharmaceutical Review, page 28, of 1896, and noting some errors in the article, I have thought perhaps you would be glad to have an article on the subject upon which you can depend as being accurate in every particular. I would suggest that you reproduce the cut on page 29 (Fig. 1) in preference to the cut on page 30 (Fig. 2), as the cut on the first page shows the woman in their ordinary Samoan dress and that on the second page shows that they have evidently dressed for the occasion. I think that the cut that you have reproduced from "Captain Cook's Voyage" (Fig. 3) was probably an imaginary cut made in London from Cook's description. There are many things in the cut that I did not see in the South Pacific Islands, such as the style of head dress, tattooing of the upper part of the body, general shape of the houses, the wearing of the lava-lava, the bracelet on the arm, the shape of the water vessels on the ground. In fact, there are so many exceptional things in the picture that I feel very confident it was never made except from imagination. *C. G. L.*

Fig. 1. Preparation of Kava-Kava.

Fig. 2. Preparation of Kava-Kava,

four to six feet high, or herb I would call it as the stems while perennial do not appear woody. Several stems proceed from the same rootstalk. They are about the size of a finger and conspicuously noded at intervals of three or four inches. The leaves are few but large and heart-shape. In general aspects it reminds me of a large begonia plant. I saw no plants in flower or fruit. The root, which is the part used, is of very slow growth and the plant should be five years old at least before it is dug.

Samoans prefer the drink made from the dried roots, but if they do not have it dried they will use it green. Several articles I have read on Kava, state that the root is first chewed to a pulp and while that may have been the custom formerly it is not the custom now. I saw it chewed on two or three occasions and also drank the Kava made in that way, but then the root was green. If the root is dried as they like to have it, it is pounded to a powder with a small boulder on the concave top of a larger boulder. Then the powder is put into a Kava bowl and the Taupou girl,[2] after washing her hands, pours water (about a gallon) on the powder and thoroughly stirs it with her hands for five or ten minutes. Then taking the fiber of the cocoanut husk or the fiber of the bark of the fau tree,[3] she strains the powdered root out of the liquid and the kava is ready. When the kava is made it is always announced by the company by a general clapping of hands. Usually a boy or girl passes the kava around. A cocoanut shell[4] is used and the Taupou girl dipping the fiber strainer in the bowl fills the cup by wringing it over the cup. The "talking man" announces in a loud voice to whom the boy shall pass it and the person announced acknowledges by clapping his hands. Samoans have very great ceremony in drinking kava and it is always served to the company in the order of their rank. Being a white man among them I was supposed to be a "big chief" and usually honored by having the kava passed to me first.

Kava looks and tastes something like soapy water. I did not acquire a taste for it, though I got to drinking it without any repugnance. If a person is hot and thirsty, it will quench the thirst as water will not, and frequently when tired and thirsty I have ac-

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[2] The word Taupou means virgin and every village has a Taupou girl, "the maid of the village," and she always is called to make the kava.

[3] Fau tree (not "Fow" as spelled in the article in Pharmaceutical Review), *Hibiscus tiliaceus*, a very common tree along the shores in Samoa.

[4] Not a "banana leaf" as stated in Pharm. Review article, probably a *lapsus pennae*.

cepted the invitation of some hospitable native who would invite me to come into his house and take a bowl of kava.

Among the older men of the island I have noticed diseased eyes which are attributed to prolonged use of kava, but excepting this I heard of no injurious effect from it. Some of the whites of the island

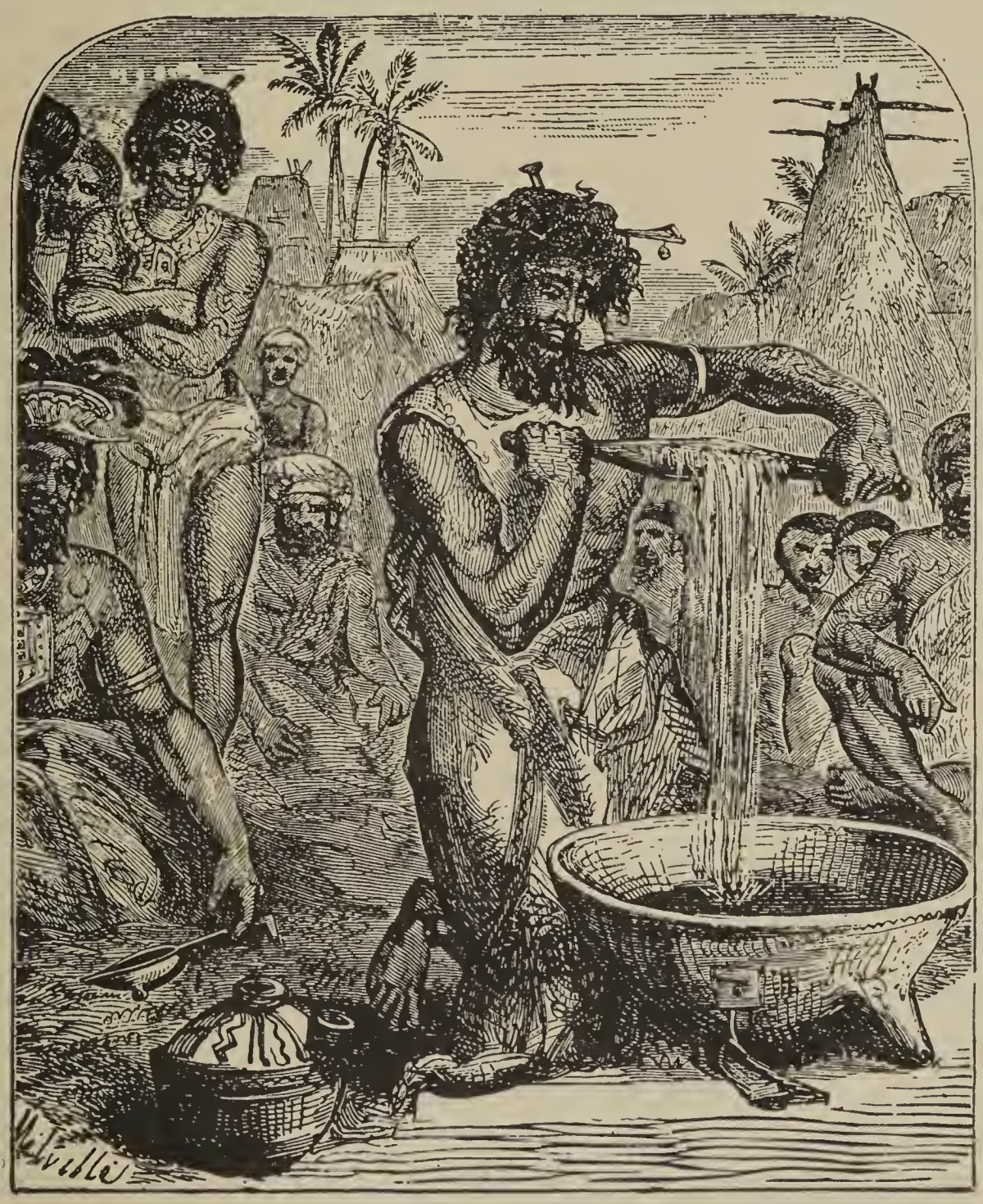

**Fig. 3. Preparation of Kava-Kava.**

have acquired a taste for the drink and use it regularly. The barber in Apia makes a bowl every day and several of the men of the town go there regularly for it. The barber told me that kava suppresses sexual desires and that he drank it because it was cheaper than keeping a wife. Unfortunately the natives of Samoa and the whites

who associate with them are such confirmed liars that I never knew when to believe a statement, and I simply repeat what the barber said for what it is worth.

I have written this article principally to correct two erroneous impressions about the drink of ava or kava. 1st, that the kava is now prepared by chewing the root, which is the exception, not the custom in Samoa, and 2nd, that it is used as an intoxicating drink. It has no more right to be classed as an intoxicating drink with Samoans than coffee or tea with us.

We reproduce herewith a cut taken from the Pharmaceutical Review of 1896, which is familiar to me as a stock photograph kept on sale at Apia for the tourists. It is evident that the subjects have been "posed" for the photograph, because no one ever saw three girls sitting at the base of a cocoanut tree making kava.

It shows, however, well the peculiar kava bowl cut (legs and all) from a solid block of wood and which is seen in every chief's house, as well as presenting a good illustration of the native Samoan women.

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# On the Alkaloids of Ceanothus Americanus.

By *H. M. Gordin.*

## Preliminary Notice.[1]

*Ceanothus Americanus*, or Red root, is a small shrub growing in many parts of this country. The root is astringent and the leaves of the plant were used as a substitute for tea during the Revolutionary war. The plant belongs to the natural order of *Rhamnaceae.* The first investigation of the constituents of this plant was made by H. K. Bowman.[2] Later H. M. Clinch[3] published an investigation of the leaves. These were also investigated by J. A. Buckner.[4] The detection of an alkaloid in the root is due to Gerlach.[5] An alkaloid was also obtained but not analyzed from the *Ceanothus reclinatus* (L'heritier) by Stiern,[6] but owing to the statement of Stiern, that his alkaloid was precipitated by lead acetate, it is doubtful whether

[1] Though the work upon this subject is just in the beginning, it seems desirable to give the results obtained thus far, as I intend to continue the investigation.
[2] Am. Jour. Pharm., 41, p. 195.
[3] Am. Jour. Pharm., 56, p. 131.
[4] Am. Jour. Pharm., 63, p. 428.
[5] Am. Jour. Pharm., 63, p. 332.
[6] Pharm. Rundsch., 2, p. 122.

the alkaloid of *Ceanothus reclinatus* is identical with the one obtained by Gerlach from *Ceanothus Americanus.*[7] This alkaloid was named by Gerlach "ceanathine." He obtained it as a white granular powder by extracting the root of *Ceanothus americanus* by means of acidulated water and shaking out the aqueous extract, made alkaline with a mixture of ether and chloroform. According to Gerlach, the root contains about half a percent of alkaloid. The root I am working upon[8] contains only 0.2 percent of alkaloid. The root was assayed by several different methods, avoiding the use of strong agents and effecting as complete an exhaustion as possible, but in no case could more than one-fifth of one percent be obtained.

The alkaloid obtained by Gerlach's method does not seem to be an individual compound, as by repeated solution in hot alcohol the melting point of the alkaloid which separates out on cooling does not remain constant. The melting point of the crude alkaloid is not sharp; commencing to soften at about 170° C. it melts completely at 190° C. After the first separation from its solution in hot alcohol it melted at 227° C.; after a second separation the melting point ran up to 249° C. If the part which separates out on cooling from hot alcohol be dissolved in acidulated water, filtered and precipitated by ammonia, a snow-white substance is obtained which after drying and washing is almost insoluble in absolute ether, very difficultly soluble in alcohol, has a melting point of 255° C., and forms a picrate which is very difficultly soluble in alcohol. If the same operations be performed upon the part which is left in the alcoholic mother liquid, i. e., the later be largely diluted with acidulated water, filtered and precipitated with ammonia, a white substance is obtained which is quite soluble in absolute ether, easily soluble in alcohol, melts at 200° C., and forms a picrate which is easily soluble in alcohol.

These facts would seem to indicate that the substance named by Gerlach *ceanothine* is a mixture of an ether soluble and an ether non-soluble compound, and I intend to try a purification or a separation by means of absolute ether and formation of derivatives. As to solution in hot alcohol and separation from the cooled solution, it is attended with too great loss of material to be of any value. All attempts to obtain the alkaloid or a derivative of it in a crystal-

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[7] Owing to the fact that ceanathine is "salted out" by many neutral salts, it is possible that this "salting out" was mistaken by Stiern for precipitation. If such be the case, Stiern's alkaloid might be identical with Gerlach's.

[8] Obtained from Allaire, Woodward & Co., Peoria, Ill.

line form have so far failed. The alkaloid forms a platinum salt, which is easily soluble in hot alcohol, but little soluble in cold alcohol. It also forms a gold salt, which is very easily soluble in cold alcohol, and its alcoholic solution is not precipitated by ether. The alkaloid forms an acetyl derivative and a benzoyl derivative. None of these compounds crystallize. It also absorbs bromine which would seem to indicate that it is an unsaturated compound. A solution of the alkaloid in hot benzol or hot carbon tetrachloride gelatinizes on cooling. That the compound is an alkaloid was proven by Lassaigne's test for nitrogen and by its behavior towards immiscible solvents, but whether the compound is a mixture of several alkaloids or it is simply contaminated with some impurity, will have to be investigated.

The alkaloid is easily extracted from the root by means of acidulated water or alcohol. It is almost insoluble in water and its acetate is much less soluble than its hydrochloride or sulphate. It is easily "salted out" by neutral salts.

The details of the method of extraction which I used will be given in the near future, when I hope to obtain a better insight into the nature of this compound.

At the conclusion I take great pleasure in expressing my heartiest thanks to Prof. A. B. Prescott, in whose laboratory this work is being carried out.

University of Michigan, Ann Arbor, Mich., May 23d, 1900.

# MONTHLY REVIEW.

## Chemistry.

**Crystalline Bismuth Oxysalts.**—By heating the amorphous precipitates of the oxychloride and oxybromide of bismuth with a large volume of water in the presence of excess of hydrochloric or hydrobromic acid, so as to dissolve the precipitate, and then allowing the solution to cool, A. de Schulten obtains the respective oxysalts in a definite crystalline form. BiOCl and BiOBr thus obtained, occur in clear, colorless, quadratic crystals. The oxyiodide, BiOI, on the contrary, crystallises as the temperature rises, in the form of clear copper-colored crystals, when a solution of bismuth oxide is dissolved in excess of hydriodic acid, then diluted with a large volume of water and warmed on the water bath. If a considerable excess of acid be not present, black crystals of bismuthous iodide will be formed.

[Bull. de soc. chim., 23, p. 156; from Pharm. Jour., p. 357.] *E. K.*

**Iodometric Estimation of Hydrogen Dioxide, Alkali Percarbonates and Persulphates.**—E. Rupp bases estimations upon the liberation of iodine which occurs when these substances are treated with potassium iodide in an acid solution.

Hydrogen dioxide decomposes according to the following equation: $H_2O_2+2KI+H_2SO_4=I_2+K_2SO_4+2H_2O$. Method: Mix 1 cc. of hydrogen dioxide solution with 20 cc. of water and dilute sulphuric acid and add 1 gm. of potassium iodide. After ½ hour titrate the free iodine with thiosulphate.

Percarbonates are decomposed into sulphates, carbon dioxide and hydrogen dioxide when treated with sulphuric acid and hence may be estimated in the same manner.

Persulphates may also be determined this way. The reaction is: $K_2S_2O_8+2KI+2H_2SO_4=I_2+4KHSO_4$. The mixture should stand two hours before the free iodine is titrated.

[Arch. d. Pharm., 238, p. 156.] *W. A. P.*

**The Vapor Density of Mercury and Mercurous Chloride.**—It having been found that pure ammonium chloride, if perfectly dry, does not dissociate when vaporized and has a normal vapor density, H. Brereton Baker has redetermined the density of mercury and of mercurous chloride. The results indicate that the molecule of calomel at 448° C. is $Hg_2Cl_2$ and that mercury at this temperature is monatomic.

[Proc. Chem. Soc., 16, p. 68.] *W. A. P.*

**A Volumetric Valuation Method for Syrup of Ferrous Iodide.**—E. Rupp suggests a method which depends upon the liberation of iodine by permanganate: $10FeI_2+6KMnO_4+24H_2SO_4=I_{20}+5Fe_2(SO_4)_3+6MnSO_4+3K_2SO_4+24H_2O$.

Excess of permanganate is destroyed by the sugar contained in the syrup and in the liberated iodine deposited. If now potassium iodide is added, the free iodine dissolves and also a further quantity liberated by the reduction of the ferric salt formed in the first reaction, thus: $5Fe_2(SO_4)_3+10KI=10I+10FeSO_4+5K_2SO_4$. Hence $10FeI_2$ liberate 30I and 1 cc. decinormal sodium thiosulphate corresponds to 0.20666 p. c. $FeI_2$.

Method: 5 gm. of syrup are diluted with 10 cc. water, 10 cc. dilute sulphuric acid added and then a 1 p. c. potassium permanganate solution until the liquid remains purple for 2—3 seconds. The color is best seen if the liquid is rotated and the thin layers of liquid rising on the sides of the vessel observed. The mixture is then set aside for three hours, shaking occasionally, then 1—2 gm. potassium iodide added and after 1 hour, free iodine titrated with thiosulphate. [Arch. d. Pharm., 238, p. 159.] *W. A. P.*

**The Assay of Aconite.**—A. R. L. Dohme contradicts the statements of an adherent to the so-called physiological assay to the effect that aconite

can not be assayed chemically. If the author referred to ever attempted to assay aconite, he must have used inadequate or imperfect methods, since Dohme obtained good results with Keller's method of assay, and demonstrated by chemical tests that the alkaloid extracted was aconitine. He proposes to show that the product obtained as the result of assays is aconitine unimpared in its physiological activity.

[Drug. Circ., 44, p. 69.] *W. A. P.*

**Cannabis Indica Poisoning.**—C. J. O'Day describes the effects of the liberal use of Piso's Consumption Cure, taken while, as engineer, in charge of a freight-train. Having since studied medicine he now recognizes them as the typical hallucinations produced by Indian hemp.

[Plexus, 5, p. 325.] *W. A. P.*

**The Separation and Identification of Acids.**—R. Abegg and W. Herz have elaborated a scheme whereby in one and the same solution all the commonly occurring acids may be separated and identified. The scheme includes carbonates, cyanides, sulphites, nitrites, sulphides, acetates, fluorides, silicofluorides, ferrocyanides, ferricyanides, sulphocyanides, chlorides, bromides, iodides, nitrates.

The following is the method adopted:

1. Boil the substance with dilute HCl (or $HNO_3$):

$CO_2$: effervescence, gas renders lime water turbid.
$SO_2$: " odor.
$N_2O_3$: red vapor, odor.
$H_2S$: odor (ppt. of S), blackens lead paper.
HCN: odor of peach kernels, easily missed, further test in 2.
$HC_2H_3O_2$, after boiling off others: odor of vinegar, identified in 5.

2. Boil substance with NaOH to remove all kations, filter and acidify filtrate with HCl (or $HNO_3$), warm to expel $CO_3$ ions, make alkaline with $NH_3$ and add excess $CaCl_2$ (or $Ca(NO_3)_2$) and filter.

Ppt. contains:

| | | | |
|---|---|---|---|
| $F'$ as $CaF_2$ | insol. in | with | insol. with $H_2SO_4$: HF. |
| $C_2O_4''$ as $CaC_2O_4$ | acetic acid. | dil. HCl | sol., reppt. with $NH_3$. |

| | | |
|---|---|---|
| $CN'$ as $Ca(CN)_2$ | soluble in acetic acid | with $Fe^{\cdot\cdot}$, $Fe^{\cdot\cdot\cdot}$ and $OH'$ and boiling: a blue ppt. |
| $C_4H_4O_6''$ as $CaC_4H_4O_6$ | | with much $K^{\cdot}$: $KHC_4H_4O$. In filtrate |
| $HAsO_3''$ as $CaHAsO_3$ | | with $H_2S$, cold, a ppt. at once: $As_2S_3$. |
| $HAsO_4''$ as $CaHAsO_4$ | | In filtrate with $H_2S$ ppt. slowly on warming: $As_2S_3 + S_2$. |
| $HPO_4$ as $CaHPO_4$ | | In filtrate ppt. with Am. molybd. or Mg. mixt.: phosphate. |

3. In filtrate from 2 with $BaCl_2$ (or $Ba(NO_3)_2$) are precipitated:

| | | | |
|---|---|---|---|
| $CrO_4''$ and $Cr_2O_7''$ as $BaCrO_4$, $SiF_6''$ as $BaSiF_6$ | insol. in HCl | Fuse | permanent, still insol. in HCl. |
| | | | SiF evolved in $H_2O$: $SiO_2$, |
| | | | residue is $BaF_2$, sol. in HCl. |

4. Filtrate from 3. is rendered exactly neutral with HCl (or $HNO_3$). $ZnCl_2$ (or $Zn(NO_3)_2$) precipitates:

$FeCy_6'''$ as $Zn_3(FeCy_6)_2$: brownish-yellow } dissolve { with $Fe^{\cdot\cdot}$ } brown color.
$FeCy''''$ as $Zn_2FeCy_6$: white { with $OH'$ { and $H^{\cdot}$ } Prussian blue.

5. To a small part of filtrate from 4. add very little $F^{\cdot\cdot\cdot}$, a red color:

$CNS'$ as $Fe(CNS)_3$ } unchanged by boiling.
$C_2H_3O_2$ as $Fe(C_2H_3O_2)_3$ } ppt. on boiling, also fading of color.

6. If $CNS'$ is absent, and the reagents used so far in form of nitrates, test a drop of filtrate from 4. with $Ag^{\cdot}$ solution:
A ppt. indicates $Cl'$, $Br'$, or $I'$.

Test a portion of filtrate from 4. with $CS_2$ and little Cl water:
$I'$: violet in $CS_2$, discharged by excess $Cl_2$.
$Br'$: brown in $CS_2$, permanent with excess $Cl_2$.

To another portion of filtrate add $K_2Cr_2O_7$, evaporate to dryness and fuse. $Cl'$ identified by distilling with $H_2SO_4$: formation of $CrO_2Cl_2$.

7. Extract some of the original substance with water and in a portion of this test for $NO_3'$ in the usual way, forming NO with $Fe^{\cdot\cdot}$ and $H^{\cdot}$. In another portion of this extract test for $ClO_3'$ by evaporating and fusing: $O_2$.

If the reagent were chlorides instead of nitrates, the original must be tested for $Cl'$ and a portion of 6. is tested for $NO_3'$ after boiling off $CS_2$ and $Cl_2$. [Ztschft. f. anorg. Chem., 23, p. 236.] *W. A. P.*

**Extraction and Estimation of Colchicine.** — After enumerating the difficulties which, owing to the easy decomposition of this alkaloid by acids and alkali, are met with in the assay of colchicum, Gordin and Prescott describe their experiments with various neutral menstrua, and come to the conclusion that the best menstruum is in this case hot alcohol. The presence of oil in colchicum also causes considerable trouble by forming an obstinate emulsion. This difficulty is overcome by treating the aqueous liquid with petroleum ether which takes up all the oil. The colchicine is estimated either gravimetrically or volumetrically by saponifying the alkaloid with an excess of standard potassium hydrate and estimating the excess after saponification by means of standard acid using phenolphtalein as indicator. The volumetric method is based upon the fact that colchicine is a methyl ester of an organic acid and is easily saponified.

The details of the assay of colchicum seeds or root are as follows: Twenty-five Gm. of the powdered (No. 60) drug are exhausted in a Soxhlet or any other suitable hot extraction apparatus with strong alcohol (95 percent) for two hours, the alcohol is then distilled off completely, the oily residue taken up with about ten Cc. of hot water and the mixture without filtering poured into a small separating funnel. The vessel in which the extraction had taken place is washed two or three times with small

quantities of hot water, and the washings added to the mixture in the seyarating funnel. Two or three Cc. of petroleum ether are now poured carefully into the separating funnel; the latter is inclined in different directions so as to allow this mentrnum to take up the oily drops adhering to the sides of the separator. Shaking is likely to give an emulsion. The separator is set aside for fifteen to twenty minutes. After that time the oil will be found to be floating upon the surface of a turbid aqueous layer. The lower aqueous liquid is run off without filtering into a 100 Cc. measuring flask, washing the outlet tube once or twice with small quantities of water. About 10 Cc. water are now added to the contents of the separator, the latter vigorously shaken and its contents drawn off into a small evaporating dish. In a few minutes on a warm water bath the small quantity of petroleum ether will have evaporated off, leaving a comparatively clear aqueous liquid having an oily layer on its surface. The contents of the evaporating dish are poured back into the separator. two or three Cc. petroleum ether again added, and after treating exactly as before, the aqueous liquid is drawn off into the measuring flask. The washing of the oil with water in this manner is repeated once more, and it will be found that no trace of colchicine will be left in the oil. To make the complete removal of colchicine sure, the oil should be washed once more, and a few drops of the filtered and strongly acidulated aqueous liquid tested with Mayer's or Wagner's reagent. If a reaction is obtained, the last washings should also be added to the contents of the measuring flask. The turbid liquid in the flask is now diluted to 100 Cc., one or two grammes purified talcum (National Formulary) added, the flask thoroughly shaken, and the liquid filtered through a dry filter.

Eighty Cc. of the perfectly clear filtrate ( = 20 grammes drug) are measured off into a separator and shaken out three times with chloroform, are filtered through a very small dry filter into a flask and the chloroform completely distilled off. To the colchicine left in the flask, 10 cc. of water are added, and while the flask is kept on a boiling water bath, air is drawn over the surface of the liquid by means of a pump for about half an hour. The colchicine can now be estimated either gravimetrically, or by saponification, or by both methods in succession, using one method as a control of the other. For the gravimetric estimation air is kept sweeping through the flask till all the water is driven off. The flask is then thoroughly dried in a vacuum over sulphuric acid and weighed. Taking the weight of the flask before or after the estimation, the amount of colchicine can be easily found. For the volumetric estimation, forty Cc., fortieth normal KOH are added to the solution of the colchicine after air had been drawn over it as described above, the flask connected with a reversed condenser and the liquid boiled briskly on a wire gauze for two hours. The flask is then cooled, the liquid diluted to about 100 Cc. and the ex-

cess of KOH titrated back with N/40 hydrochloric acid, using phenolphthalein as indicator. The number of Cc. of N/40 KOH consumed in the saponification, divided by twenty, gives the percentage of colchicine in the drug. [Read at the Richmond Meeting of the A. Ph. A.] *H. M. G.*

**Basil Oil.** — The annual Report for 1898 of the Botanical Garden in Buitenzorg gives particulars of two different kinds of basil oil.

A large-leaved variety of *Ocimum basilicum*, called by the natives *Selasih Mekah*, yielded upon distillation 0.18 to 0.32 percent of essential oil of a sp. gr. of 0.90 at 26°. The optical rotation, in a tube of 200 mm., was —30.5 to —36°. The oil was rich in eugenol, the content of this phenol varying between 30 and 40 percent of the volume. From the non-phenol portion a substance was obtained which possessed an agreeable odor, boiled at 190°, and is still under examination.

Another variety of *Ocimum basilicum* gave about 0.2 percent oil of a fennel-like odor, having a sp. gr. of 0.948 at 25°. It boiled for the greater part at 214 to 218° and consisted chiefly of methylchavicol.* When treated with an alcoholic solution of potash, anethol was obtained, and by oxidation anisic acid. [Report of Schimmel & Co., Apr. 1900, p. 6.] *E. K.*

**Citronella Oil.**—In their Report for October 1899, Schimmel & Co. published an exhaustive examination of Ceylon citronella oil, distilled from the grass known as *Lana Batu*. It was there shown that, in addition to the already known substances, camphene, dipentene, borneol, geraniol and citronellal, the following were found to be new: l-limonene, traces of linalool, methyleugenol, a light sesquiterpene, and a dextrogyrate, heavy sesquiterpene.

In recent times, however, a citronella oil of decidedly finer quality, to which they have repeatedly called attention, has been introduced from Java. It is obtained from a citronella grass called *Maha pangiri*, has a comparatively low specific gravity (up to 0.894), low rotation (up to —3°), and contains a high percentage (up to 91 percent) of acetylisable bodies. It is much more easily soluble in 80 percent alcohol than the *Lana Batu* oil. As far as the present analyses go, both oils have the same constituents, but in considerably varying proportions; the Java quality, with an equal geraniol-content, containing nearly twice as much citronellal as the *Lana Batu* oil. Further, the content of methyleugenol of the first-named oil is very small, as may be surmised from the low specific gravity.

The following analyses may explain this more fully; comp. Report for October, 1898.

**Java citronella oil, No. 1.** Specific gravity 0.892 at 15°; optical rotation —0°50′ at 20°; soluble in 1 volume and more of 80 percent alcohol.

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* The basil oil from Réunion, previously examined by Bertram and Walbaum, consisted also largely of methylchaviol. Archiv d. Pharm., 235, p. 177.

**Java citronella oil, No. 2.** Specific gravity 0.892 at 15°; optical rotation —2°26′ at 18°; saponification number = 46.6; soluble in 1 volume and more of 80 percent alcohol; $n_{D16} = 1.46862$.

The results obtained are summarized in the following table. The data of *Lana Batu* oil, given for the purpose of comparison, are the same as those obtained by the analysis published in the Report for Oct. 1899, p. 24.

| Variety of Oil. | Total Alcohol percent. | Citronellal percent. | Geraniol percent. | Methyleugenol percent. |
|---|---|---|---|---|
| Java oil No. 1..... | 88.6 | 50.45 | 38.15 | 0.78 |
| " " " 2..... | 87.21 | 55.34 | 31.87 | 0.84 |
| *Lana Batu* oil..... | 61.1 | 28.2 | 32.90 | 8.0* |

It will be seen from the above, that Java oil is distinguished by its high citronellal-content, whereas the content of geraniol is very nearly the same as that of the Ceylon *Lana Batu* variety. Further, the content of methyleugenol in the Java oil is but small—about 0.8 percent, as compared with 8 to 10.75 percent in *Lana Batu* oil.

[Report of S. & Co., Apr. 1900, p. 12.] *E. K.*

**Cochlearia Oil.** —The researches of Gadamer† on the subject of oil of cochlearia have induced Schimmel & Co. to experiment in the course of last autumn with the distillation of fresh annual scurvy-grass, grown on their Miltitz fields. These trials have been very satisfactory. It has been found that the most rational way is to treat the material in the fresh state, without the addition of white mustard; but the herb must be cut up most carefully. In this manner an average yield of oil of 0.04 percent was obtained. The addition of mustard powder had the effect of slightly reducing the yield; in that case it was only 0.039 percent. A trial with the dried herb gave the following result: 138 kilos of fresh scurvy-grass produced 13.7 kilos of dried herb, which, when distilled jointly with 6 kilos of ground mustard-seed, gave a yield of 24 grammes of oil. Calculated on the basis of fresh scurvy-grass, this yield is equal to 0.0173 percent, and to 0.175 percent when taken on the dried grass, or considerably less than if fresh, well triturated herb had been used. How the matter stands with the flowering herb will be the subject of further researches in the course of this year.

The specific gravity of the oil obtained varied from 0.933 to 0.950; the optical rotation $\alpha_D$ from +52° 37′ to +54° 38′.

[Report of S. & Co., Apr. 1900, p. 16.] *E. K.*

**Eucalyptus Oil.** — Baker describes three new species of eucalyptus, and reports on their wood, kino, manna, and essential oil:—

*Eucalyptus smithii* is a stately tree, growing to a hight of 150 feet, and having a diameter of 2 to 4 feet. Botanically it comes between *E. Bäuerleni*

* In another sample of *Lana Batu* Oil, 10.75 percent of methyleugenol were found.

† Archiv d. Pharm., 237 p. 92.—See also Report, April 1899, p. 15.

F. v. M. and *E. viminalis* Labill., and with these it belongs to the group of *Viminalis*. The leaves give on distillation an average of 1.353 percent of oil, containing over 70 percent of cineol (eucalyptol). In addition to this, only d-pinene appears to be present; it does not contain phellandrene.

*Eucalyptus dawsoni*, also called Slaty Gum, used to be considered a variety of *E. polyanthema* Schau., but a closer botanical examination of the tree, as well as of the composition of the oil, induced Baker to consider this a new species of eucalyptus. The oil yield was only 0.172 percent; the specific gravity was found to be 0.9414, at 15°. The oil did not contain cineol, but a fairly large quantity of phellandrene was present. The principal constituent, however, appears to be a sesquiterpene.

*Eucalyptus camphora*, known as Sallow or Swamp Gum, prefers a moist, marshy soil, especially the banks of a river. Distillation of the leaves gives an average of 0.398 percent of oil of a specific gravity of 0.916. It contains pinene, cineol, and much eudesmol. The last-named substance separates in a short time in crystalline form from the fraction boiling between 280 and 290°, which forms about 18 percent of the whole.

[Report of S. & Co., Apr. 1900, p. 26.] *E. K.*

**Eucalyptus Camphor.**—Smith makes a further communication concerning the eucalyptus-camphor, or eudesmol, discovered by him in the oil of *Eucalyptus piperita*. This remarkable substance has up to the present been found in the following plants: *Eucalyptus goniocalyx*, *E. Smithii*, *E. camphora*, *E. stricta*, *E. elaeophora*, *E. macrorrhyncha* and *E. piperita*.

As a basis for the production of large quantities of eudesmol, the oil derived from *Eucalyptus macrorrhyncha* was used, after removal by fractional distillation of the parts boiling up to 190°. From the residue, the crude eucalyptus camphor separated out as a butter-like, crystalline mass, which was purified by spreading it on porous earthenware plates, dissolving in alcohol, adding water until a slight cloudiness remained, and crystallizing this solution out. By repeating this operation several times, pure white silk-like needles were obtained, with a melting point of 79 to 80°. Eudesmol is insoluble in water and aqueous alkaline solutions, but dissolves readily in the usual solvents such as alcohol, ether, petroleum-ether, etc. It is easily sublimated, optically inactive, and has the composition of an isomer of camphor, $C_{10}H_{16}O$. The chemical nature of this compound is as yet but poorly understood.

The cineol-content of eucalyptus oil varies according to the degree of maturity of the leaves used in the distillation; and, according to Smith, the content of cineol in oils containing eudesmol increases when these oils are kept in such a way that the oxygen of the atmosphere can act upon them. On these grounds eudesmol is believed to be an intermediate product in the process of formation of cineol.

[Report of S. & Co., Apr. 1900, p. 27.] *E. K.*

**Liquid Orris Oil.**—According to a note in the Chemist and Druggist,* J. C. Stead has succeeded in obtaining in the fluid state commercial orris oil, which up to the present has been either of a solid or of a butter-like consistency. The author states that five parts of the concrete oil yield one part of a golden-yellow oil, having a powerful odor, which, on extreme dilution, produces the delightful aroma of violets. The oil is soluble in all proportions of ether, alcohol, chloroform, petroleum ether and benzene, and gives a clear solution with eight times its volume of 70 percent alcohol. It is acid in reaction and has the following physical constants: $d_{15.5^0} = 0.9489$; $\alpha_D = -28.25°$; congealing point $-5°$.

On distillation under atmospheric pressure, the oil decomposes; it does not react with bisulphite solution, but contains some free acid, and also alcohol compounds, as appears from the consumption of potash solution before and after acetylization.

In the absence of further particulars as to the method of producing this oil, it is difficult to pronounce a definite opinion on the subject. If the oil only is freed from the myristic acid, which is contained therein in the proportion of over 80 percent, so that each five parts of concrete oil would yield one part of liquid oil, it is remarkable that the liquid oil is stated to be comparatively high laevogyrate. For the analyses, made at the time by Tiemann and Krüger,† have shown that liquid orris oil is a mixture of irone, the methyl esters of myristic and oleïc acid, as well as oleïc aldehyde and oleïc acid itself. As irone is dextrogyrate—according to Tiemann about 40° in a tube of 100 mm.—fluid orris oil should also possess dextrorotation, though to a smaller degree than irone, which was confirmed by actual experiment by the chemists of Schimmel & Co.

[Report of S. & Co., Apr. 1900, p. 33.] *E. K.*

**On the Occurrence of Methyl Salicylate.**—According to the most recent researches, methyl salicylate appears to be one of the most widely diffused odorous substances in the vegetable kingdom. The report issued by the Botanic Gardens of Buitenzorg[1] contains another lengthy list of plants of the most diverse families, in the leaves of which methyl salicylate has been found, the following being especially mentioned:

Anacardiaceæ: *Mangifera sp.*, *Semicarpus sp.*

Apocynaceæ: *Allamanda hendersoni* Bull., *Chilocarpus densiflorus* Bl., *Ch. denudatus* Bl., *Melodinus lævigatus* Bl., *M. orientalis* Bl., *Landolphia watsonii.*

Artocarpaceæ: *Cecropia schiedenana* Kltsch., *Ficus elastica* Roxb., *F. benjamina* L., *F. benjamina* L. *var. crassinerve*, *F. annulata* Bl., *F. genicu-*

* Vol. 56, p. 472.
† Compare Gildemeister and Hoffmann: "Die ätherischen Oele," p. 396.
[1] Verslag comtrent den staat van s'lands plantentuin te Buitenzorg over het jaar 1898, p. 29.

*lata* King, *F. pilosa* Reinw., *F. pilosa var. chrysocanna*?, *F. retusa* L. *var. nitida*, *F. xylophylla* Wall., *Streblus mauritianus* Bl., *Sloetia sideroxylon* T. et B.

**Burseraceæ**: *Canarium spec.* Key.

**Boraginaceæ**: *Cordia asperrima*[1] D. C.

**Cupuliferæ**: *Castanopsis javanica* A. D. C., *C. javanica* Miq. *var.*, *C. tungurrut* Miq., *C. spec.* Bangka, *Quercus spec.*, *Q. bancana* Scheff., *Q. glandulifera* Bl., *Q. Junghuhnii*[2] Miq., *Q. Teysmannii* Miq.

**Euphorbiaceæ**: *Antidesma diandrum* Spr., *Adenocrepis javanica* Bl., *Agyreia multiflora* Hsskl., *A. spec.* Timor. *Baccaurea spec.* Ceram., *Cyclostemon spec.*, *Elateriospermum tokbray* Bl., *Chytia oblongifolia* Roxb., *Euphorbiacea spec.* Mont. Salax, *Leiocarpus spec.* Bangka, *L. spec.* Lampong, *L. arborens* Bl., *Pierardia dulcis* Jacq., *P. spec.* Bangka, *P. spec.* Palembang, *P. spec.* Sumatra, *Phyllanthus zeylanicus* Müll., *Rottlera dispar* Bl., *Sphænodesma Wallichi* Schauer., *Trevia spec.*

**Gneteceæ**: *Gnetum gnemon* L. β *ovalifolium.*

**Lignotideæ**: *Carallia symmetria* Bl.

**Myrtaceæ**: *Memecylon spec.* Bangka.

**Podocarpaceæ**: *Podocarpus chinensis* Wall., *P. nagera* R. Brown.

**Rosaceæ**: *Rubus sundaicus* Bl.

**Rubiaceæ**: *Canthium spec.* Bangka, *Gardenia schœmanni* T. et B., *Nauclea* spec. Ambon, *Pavetta angustifolia* R. et S., *P. arborea* Bl., *P. barbata* Sm., *P. grandiflora* Ker. *var. lutea et aurantiaca*, *P. littorea* Miq., *P. longiflora* A. Rich., *P. rosea* D. C., *P. balludosa* Bl. (*major*), *P. longipes* D. C., *P. spec.* Bangka, *P. spec.* Amboina, *Petunga variabilis* Hsskl., *P. spec.* Borneo, *Psychotria celastroides* Griseb., *Wendlandia spec.* Borneo.

**Styraceæ**: *Symplocos spec.* Bangka.

**Ternstrœmiaceæ**: *Calpandria lanceolata* Bl., *Thea cochinchinensis* Lour.

**Tiliaceæ**: *Elæocarpus resinosus* Bl.

**Urticaceæ**: *Gironniera subæqualis* Planch., *G. spec.* Ambon.

To this list we may further add the flowers of *Cananga odorata* Hooker et Thomson, which also contain methyl salicylate.

[Report of S. & Co., Apr. 1900, p. 47.] *E. K.*

**Wartara Oil.**—Some time ago Schimmel & Co. received from Bombay, under the name of "Wartara seeds," a drug with a strong aromatic odor. Owing to its great similarity to the fruit of *Xanthoxylum piperitum* D. C., *Rutaceae*, which had been previously distilled by us, we considered it probable that it belonged to the same species. The description given of the fruit of *Xanthoxylum alatum* Roxb. and *X. acanthopodium* D. C., on page 257, Vol. I of the Pharmacographia Indica by Dymock, Warden and Hooper,

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[1] Appears to contain also salicyl aldehyde.
[2] The distillate has an alkaline reaction.

agrees so well with this drug that the identity can hardly be doubted. It reads as follows: "The fruits of *Xanthoxylum alatum* and *X. acanthopodium* consist of the carpels, usually dehiscing and empty, but sometimes enclosing the round, black shining seed. The carpels are oval or nearly spherical, 2/10 of an inch in longest dimension; externally they are of a bright reddish-brown, covered with prominent tubercles filled with oleo-resin; internally they are furnished with a hard, papery, white membrane, which becomes loose, contracts and curls up when the seed falls. The drug has an aromatic taste (at first like coriander) and an agreeable aromatic odor."

A few twigs, scattered between the fruits, have opposite, pale brown, shiny thorns, about 1.2 cm. long.

This drug has been used in the Orient since a long time as a condiment, and also for medicinal purposes. The Pharmacographia Indica makes the following statement: "The carpels of this fruit are called by Sanscrit writers "*Tumburu*," which means coriander. It would appear that the fruit was first brought from Northern India by the Arabs. Ibn Sina describes it as a berry, called *Fághireh* (open-mouthed), of the size of a chick pea containing a black seed as large as hemp seed. Háji Zein el Attár gives A. D. 1368 a similar account of *Fághireh*, and says that the Persians call the fruit *Kabádeh-i-kushádeh*, i. e. open-mouthed cubebs."

The essential oil of this fruit of the *Xanthoxylum* has been distilled in 1888 by Pedler and Warden. It commenced to boil between 175 and 176°; the greater part passed over at 176 to 179°, and the thermometer finally rose to 183°. The specific gravity was 0.893 at 15.5°.

Schimmel & Co. obtained in the distillation of the Wartara* fruit approximately 2 percent of an oil having a perceptible odor like coriander; its specific gravity was 0.8714; the optical rotation $\alpha_D = +6° 31'$; the saponification number 27.1. It made a clear solution with an equal volume of 80 percent alcohol. Distillation in vacuo, at a pressure of 14 mm., gave the following fractions:

| Fraction. | Boiling point. | Specific gravity at 22°. | $\alpha_D$ at 18.5°. | Quantity of distillate. |
|---|---|---|---|---|
| 1. | 65 to 70° | 0.841 | +0°26′ | 45 ccm. |
| 2. | 70 " 80° | 0.846 | +4°17′ | 9 " |
| 3. | 80 " 90° | 0.856 | +11°38′ | 34 " |
| 4. | 90° | 0.865 | +13°43′ | 19 " |
| 5. | 90 to 100° | 0.865 | +12°39′ | 27 " |
| 6. | 100 " 130° | 0.939 | —6°2′ | 7 " |

Fraction 1, at atmospheric pressure, boiled at 175 to 176° and yielded with bromine a fair quantity of a tetrabromide melting at 125°. It consequently consisted of almost pure dipentene.

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* The name "Wartara" possibly originates from "Fagara." The species *Fagara* is so closely allied to *Xanthoxylum* that some botanists consider them as identical.

Fractions 3 to 5 were united and once more fractionated, yielding a liquid having the properties of d-linalool. Its specific gravity was 0.868, optical rotation +14°20′ boiling point 78° at 14 mm. pressure. The identity of this body with linalool was proved by its conversion into citral and l-terpineol.*

The citral obtained in the oxidation with a chromic acid mixture yielded the characteristic naphtocinchoninic acid with a melting point between 197 to 200°. Treatment with formic acid produced l-terpineol with a melting point of 35°. An alcoholic solution containing 3.6 percent of this terpineol had the specific rotatory power $[\alpha]_D = -10°14'$ at 18°. Treatment with carbanil readily yielded terpinylphenylurethane melting at 112 to 113°.

It is thus proved that d-linalool, up to now exclusively found in coriander oil, is also a constituent of wartara oil.

[Report of S. & Co., Apr. 1900, p. 49.] *E. K.*

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## Practical Pharmacy.

**Ergotines** (Commercial).—In addition to various preparations satisfying the requirements of the Pharmacopoeiae, a number of ergotines are supplied commercially the pharmacodynamic properties and dosing of which are subject to considerable uncertainty. The following notes may therefore be welcome as a guide to physicians and pharmacists.

**Ergotin Bonjean.**—A soft aqueous reddish-brown extract prepared from *Secale cornutum*, purified by the addition of alcohol. 1 part of the extract corresponds to about 5 to 6 parts of ergot. It may be administered in pills or injected subcutaneously in doses of 0.1 to 0.3 gm.

**Ergotin Bonjean depuratum pro injectione.**—An extract prepared by Bonjean's method and subjected to further purification. 1.5 parts correspond to 1 part of Ergotin Bonjean. Doses of 0.5 to 0.6 gm. may be employed subcutaneously for the treatment of uterine and internal haemorrhages.

**Ergotin Bonjean siccum cum Dextrino.**—This preparation is Bonjean's ergotine mixed with an equal proportion of dextrin. It is a brown powder and should be employed like Bonjean's ergotine, only in double doses.

**Ergotin Bonjean siccum cum saccharo lactis.**—This preparation is Bonjean's ergotine mixed with an equal proportion of sugar of milk. It is a brown hygroscopic powder and dissolves in water. Its application and dosing is similar to that of the preceding preparation.

**Ergotin Bombelon fluidum.** (*Cornutinae Ergotas.*)—A brownish-black liquid adapted both for subcutaneous injections and for internal use during childbirth. Dosing for internal use: 2.0 gm. per dose, to be repeated after 10 minutes. For subcutaneous injection 0.2 to 0.5 cc. of the preparation

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* Journal f. prakt. Chemie, II, 18, p. 119.

are aspirated into a hypodermic syringe having a capacity of 1 cc.; the syringe is filled with aqua fontana, shaken and its contents immediately injected in their freshly prepared condition.

**Ergotinum Bombelon spissum.**—This preparation has the general appearance of an ordinary extract and is destined exclusively for administration in the form of pills and for internal use in general.

Solutions of ergotine in distilled water form excellent culture media for fungi and it is therefore advisable either always to prepare the media entirely freshly or to add alcohol. A well keeping solution is obtained by the following formula:

Rp.: Ergotini Bombelon spiss. 10.0
Aqua laurocerasi 7.5
Spiritus vini rectificatissimi 2.5
SDS: 4 to 15 drops to be taken according to requirement.

**Ergotinum Denzel fluidum.**—This is a purified extract of *Secale cornutum* and is dosed like the officinal extract of the Pharmacopoeia Germ. The following prespriptions are recommended:

a) For internal use:

Rp.: Ergotini Denzel 2.0
Aquae cinnamomi 180.00
2 or 3 table-spoonfuls to be taken per day.

b) For subcutaneous use:

Rp.: Ergotini Dènzel 2.5
Boracis 0.25
Aquae destillatae 7.25
Inject 0.5—1.0 cc.

**Ergotinum Kohlmann fluidum.**—This is a brownish-black fluid miscible with water. 16 drops (1 gm.) of this preparation correspond to 1 gm. of ergot containing the original fatty constituents. Its action is similar to that of fresh ergot. Single doses of 4.0 to 5.0 gm. should be used for uterine atony. In the case of haemorrhages a similar quantity is spread over the day. For inducing labor 8 to 12 drops per hour may be given initially and this dose should be gradually raised to 20 or 30 drops if required.

**Ergotinum purum dialysatum Wernich spissum.**—This preparation is a dialyzed aqueous extract of ergot, having been treated previously with ether and alcohol successively. It very readily dissolves in water and is therefore chiefly recommended for subcutaneous purposes. Wernich's dialyzed ergotine is rich in salts and is administered in comparatively large doses (up to 2.0 gm. and even more)[1].

**Ergotinum purum dialysatum Wernich liquidum.**—About 2 parts of this ergotine are equivalent to 1 part of the above preparation. Its prescription should conform to this relation.

[1] B. Harnack, Arzneimittellehre, p. 799.

**Ergotinum purum dialysatum We nich siccum.** — 0.7 parts of this preparation contain the active principles of 1 part of Ergotinum Wernich spissum. Single doses should therefore not exceed 1.4 gm.

**Ergotinum purum siccum Wiggers.** — This preparation is a dried alcoholic extract of ergot partly deprived of its fat, containing according to Kobert* almost exclusively sphacelinic acid. It is a reddish-brown powder and dissolves in warm alcohol. The solution may be diluted with water at pleasure without forming a precipitate. Each dose may be 0.02—0.05—0.1 gm. but the maximum dose should not exceed 0.5 gm. per day.

**Ergotin Yvon.**—This is a brownish-black fluid extract containing an admixture of *Aq. laurocerasi* and prepared by depriving *Secale cornutnm* of its fat and exhausting it in dilute tartaric acid. 1 cc. of Ergotin Yvon corresponds to 1 gm. of Secale cornutum pulverisatum. Dose for internal use: 10 to 20 drops per dose; for subcutaneous injection, 1 cc. per day. The injections should be made at intervals of 2 or 3 days.

[Merck's Annual Report for 1899, p. 64.] *E. K.*

**Menthol Preparations.**—A recent issue of the Giornale di Farmacia contained a number of formulas for menthol preparations, which are herewith reproduced without comment.

**Menthol vinegar.** Menthol 3 parts, vinegar 97 parts. To be used with water as a gargle.

**Menthol toothache-drops.** Menthol 8 parts, chloroform 8 parts, alcohol 95 p. c. 84 parts. Apply to the cavity of the tooth on a piece of cotton-wool.

**Menthol cholera-drops.** Menthol 6 parts, tincture of ginger 8 parts, tincture of opium 10 parts, ethyl alcohol 76 parts. 10 to 15 drops every half-hour.

**Menthol ice.** 10 parts of spermaceti are melted with 10 parts of paraffin oil, and 10 parts of menthol added. To be rubbed on the nose for catarrh.

**Menthol oil.** 16 parts of menthol are dissolved on a water bath in 84 parts of olive oil.

**Menthol wine.** 2 parts of menthol are dissolved in 6 parts French brandy, and 6 parts of glycerin in 86 parts of Tokay wine are added.

**Mentholin.** 10 parts of menthol are dissolved in 78 parts of 95 p. c. alcohol, and 12 parts of strong ammonia liquor added. A smelling salt.

**Menthol anticatarrhal.** Menthol 15 parts, boric acid powder 30 parts, ammonium chloride 55 parts. Mixed together.

**Menthol chloral.** Equal parts of menthol and chloral hydrate are melted together at 30°; the resulting oily liquid is applied in cases of toothache and facial neuralgia.

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* Realencyclopaedie der gesammten Pharmacie, Vol. VII, p. 189.

**Menthol ointment.** Paraffin oil 5 parts, lanolin 85 parts. To be melted together and menthol 10 parts added. To be rubbed on the forehead for headache, hemicrania, etc.

[Report Schimmel & Co., Apr. 1900, p. 66.] *E. K.*

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## New Remedies.

**Basicin.**—A patented preparation containing caffeine and quinine. It is claimed to be stronger than quinine alone and produces none of the undesirable effects of the latter when administered either by mouth, subcutaneously or per rectum. The dose of basicin is 0.1—0.2 gm. (1.5—3.0 g.) A *Basicin oil* is also prepared, containing 5 p. c. of basicin in 37.5 p. c. of chloroform, 12.5 p. c. of alcohol and 45 p. c. of olive oil. This is also intended for internal administration, but by mouth only.

[Pharm. Zeitg., 46, p. 116.] *W. O. R.*

**Atrabilin** is a light yellow, opalescent liquid extract of *Glandula suprarenalis*, from which a grayish flocculent precipitate gradually separates. The extract is employed in 20 p. c. and undiluted solutions and possesses mydriatic and anaesthetic properties, somewhat similar to cocaine, but acts upon the deeper tissues, rather than the conjunctiva. It is administered in connection with boric acid, 5 p. c., in distilled or rose water.

[Wien. med. Wchschr.; through Ztschr. d. a. ö. Apoth. Ver., 54, p. 153.] *W. O. R.*

**Glutinpeptone Bromhydrate.**—The gluten peptone chlorhydrate was prepared in 1892 by Paul from the two components of the compound. In 1894 he prepared it from egg albumen. Levites has recently prepared the analogous bromine derivative: It is a white amorphous substance, soon turning brown, because of its unstability, liberating bromine, very hygroscopic, becoming a thick pasty mass upon exposure to the air. It is readily soluble in water, both methyl and ethyl alcohol, but precipitated from the latter but not the former solution by ether. Millon's reagent produces a decided coloration with its solutions, indicating the biuret reaction. Tannic acid produces no precipitate, but phosphotungstic acid does.

[Chem. Zeitg., 1900; through Pharm. Zeitg., 45, p. 106.] *W. O. R.*

**Gluten Peptone Iodohydrate,** the second analogue of Paul's preparation, is a white flocculent mass, readily pulverized and not very stable, soon becoming yellow with the liberation of iodine. It, however, is quite permanent in ether solution. In solubility it is practically the same as the bromine derivative and also in its chemical behavior. Mercuric chloride and mercuric chloride potassium iodide solutions produce precipitates soluble in large excess of potassium iodide.

[Chem. Zeitg., 1900; through Pharm. Zeitg., 45, p. 106.] *W. O. R.*

**Compounds of the Emetic Series.**—Commenting on the results of the researches of Baudran and others, on tartar emetic and analogous compounds, L. Prunier points out that considerable light has been thrown upon these derivatives of tartaric acid, which present so many distinctive characters that he suggests the generic name of "emetics" for these bodies. When recently precipitated antimonious oxide is dissolved in the cold in tartaric acid, two acids, either mono-antimonio-tartaric acid, COOH—CHOH—CHOSbO—COOH, or diantimonio-tartaric acid, COOH—CHOSbO—CHOSbO—COOH, may be obtained, according as one or two molecules of antimonious oxide are present. In both these only the two alcohol groups enter into the reaction, both the acid groups remain free. On saturating one of the acid groups of mono-antimonious acid with potassium hydrate a typical "emetic" is obtained. In a similar manner diantimonio-tartaric acid gives an analogous body on mixing, in solution, one molecule with a molecule of neutral potassium tartrate, thus, COOH—CHOSbO—CHOSbO—COOH + COOK—CHOH—CHOH—COOK = 2(COOH—CHOSbO—CHOH—COOK). Similarly constituted "emetics" may be obtained by substituting arsenic or bismuth for antimony. Not only so, but other metallic oxides and hydrated sesquioxides, such as those of iron and alumina, and also boric acid, combine in a similar manner.

**Animal Ferments.**—Further experiments with the ferments of horse kidney have shown E. Abelous and E. Gerard that not only does that organ contain an oxydase and a reducing diastase, but that the latter also has, in an atmosphere of hydrogen, the power of converting nitrobenzol into phenylamine. That action explains the formation of bases in the organs of animals, and confirms the opinion of A. Gautier that they are formed in the tissues, particularly in the anaerobic cells, apart from any action of putrefactive germs. The fact of the co-existence of the oxidizing and reducing ferments, and the predominance of the latter in the absence of oxygen, explains the increased formation of organic bases, when the energy of the reactions brought about by oxidation is diminished, as is found to be the case in certain diseases.

**Organo-therapeutic Preparations.** — Although the last twelve months have been less prolific than the preceding year in the discovery of essentially new aspects in organic medication yet a considerable number of papers have been published in which this branch of modern therapeutics is further developed and its clinical justification established beyond doubt by the favorable results obtained thereby, especially in those diseases which are but little accessible to therapeutic treatment. In the subjoined articles we propose to briefly record the most important results of recent investigations, but we shall mainly confine ourselves to facts of practical importance.

**Corpora lutea sicca.**—Lebreton* believes the troubles occuring during pregnancy to be due to autointoxication arising from functional insufficiency of the *corpora lutea.* He administered therefore these bodies in a dry state and gave doses 0.05 gm. twice daily to pregnant patients complaining of vomiting, nausea, suffoeative attacks, palpitation of the heart and hyperaemia. The success of the treatment manifested itself by the immediate subsidence of the symptoms of vomiting whilst the other troublesome symptoms were rapidly diminished and disappeared completely in all patients within a fortnight.

**Glandula Prostata succ. pulv.**—Hitherto this gland was administered exclusively in the treatment of hypertrophy of the prostate[1]. H. Oppenheimer[2] has recently also attempted to treat chronic prostatorrhoea with the aid of the prostata substance and found its internal application to induce a rapid and permanent cure of this trouble, provided no gonococci were present. This treatment is not indicated in the presence of the latter in the discharge, it is also necessary to interrupt it as soon as in its course gonococci show their presence in a discharge which was held to be free from germs. Where the affection of the prostata is complicated by urethritis the internal treatment may well be essayed but it should be immediately discontinued if the specific prostata symptoms do not diminish within a week.

**Glandulae suprarenalis sicc. pulv.**—The active principle of the suprarenal capsule, which Mühlmann[3] took to be pyrocatechin and O. v. Fürth[4] hydrated dioxypyridine, as subsequently examined by Gerhardt[5], appears now to have been discovered by John J. Abel[6]. This body, named epinephrine by its discoverer, is an unstable basic substance, the percentic composition of which is expressed by the formula $C_{17}H_{15}NO_4$. Epinephrine forms salts, the introduction of which into the circulation gives rise to a very enduring increase of the blood-pressure. They at first excite, but subsequently paralize, the respiratory function by their action upon the centres, the heart being affected last and after further dosing. The toxic and lethal doses exceed considerably those producing marked physiological effects without detrimental results. If kept in the dry state the whole of the epinephrine salts degenerate in time considerably with respect to solubility, which has so far greatly impeded the application of these salts. In order to secure a definite physiological result the use of the dried glandular substance and the extract prepared from it cannot therefore very well be dispensed with. The

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* Semaine médicale, 1899, No. 30, p. 237.
1 Merck's Report 1895, p. 104.
2 Dermatol. Centralbl., 1899, Vol. 47, No. 2.
3 Merck's Report, 1896, p. 111.
4 Zeitschr f. physiol. Chemie, Vol. 24, p. 142 and Vol. 26, p. 15.
5 Deutsch. med. Wochenschr., 1899, No. 40; Ver.-Beil. No. 38, p. 230.
6 Zeitschr. f. physiol. Chemie, 28, p. 318.

most recent experience of Robin[1], Destot[2] and Maurange[3] points distinctly to the utility of the suprarenal capsule in the treatment of Addison's disease, a fact which is at least deserving of attention as this disease has so far resisted all attempts to treat it by therapeutical means. Dufour and Roger de Fussac[4] have moreover treated most successfully a very grave case of neurasthenia (asthénie musculaire) by the continued administration of the substance of the suprarenal capsule.

Extraordinary interest attaches to the results derived from the experiments of W. Stoeltzner[5], who succeeded in considerably improving rachitis by the internal administration of the suprarenal substance. The essential results of this treatment may according to this author be comprised into the following statements:

1. The suprarenal substance produces excellent effects upon the general condition, restlessness, sensitiveness, sweats, vasomotor excitability and, especially, craniotabes. These symptoms are frequently improved visibly within one or two weeks.

2. The cutting of teeth and the power of sitting, standing and walking are also promoted perceptibly by this treatment, also the softness of the thorax improves often so rapidly after the commencement of the treatment that a causal connection cannot well be doubted.

3. Less marked is its influence upon the abnormal size of the fontanelle, the deformity of the thorax, the rosary and epiphyseal swellings and curvatures of the extremities. Spasm of the glottis resists this treatment almost invariably with obstinacy.

4. Generally the results are such that in the first weeks of the treatment the improvement is rapid and considerable, after which it progresses slowly. Interruption of the treatment gives generally rise to a pause in the improvement, but as soon as the treatment is resumed the improvement of the rachitis becomes again more rapid.

5. Even in severe complicated cases, such as lues, intestinal catarrh, bronchitis and pneumonia, the rachitis symptoms are generally improved visibly.

Stoeltzner prescribes suprarenal capsules in the form of tablets, each of which contains 0.005 gm. of the glandular substance and has entrusted me with the preparation of these tablets, which are placed upon the market under the designation *Rachitol.*

The number of tablets which should be given to children depends upon the weight of their bodies and may be prescribed in accordance with the following table:

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1 Thèse de Paris, 1898.
2 Lyon médical, 1898, No. 48.
3 Revue the thérapeutique Méd.-Chirurg., 1899, p. 159.
4 Médicine moderne, 1899, No. 80, p. 639.
5 Deutsche med. Wochenschr., 1899, No. 37.

| Children weighing: | During the first week of the treatment: | From the commencement of the second week: | In no case should a child be given more than: |
|---|---|---|---|
| Under 5 kilos.. | 1 tablet daily | 2 tablets daily | 2 tablets daily |
| 5 kilos..... | 2 " " | 2-3 " " | 3 " " |
| 6 " ..... | 2 " " | 3 " " | 4 " " |
| 7 " ..... | 2 " " | 3-4 " " | 5 " " |
| 8 " ..... | 3 " " | 4 " " | 5 " " |
| 9 " ..... | 3 " " | 4-5 " " | 6 " " |
| 10 " ..... | 3 " " | 5 " " | 7 " " |
| Above 10 kilos | 4 " " | 5-6 " " | 7 " " |

The time of the day at which the tablets are given is immaterial as long as they are not taken on an empty stomach.

It is best to place the tablets directly into the children's mouth. It is not advisable to dissolve them in the bottle as an undeterminable amount of the active substance is apt to adhere to the sides and bottom of the bottle and thus interfere with correct dosing.

**Extractum suprarenale haemostaticum.**—The angio-stenotic properties of the suprarenal extract have hitherto been used in practice mainly for ophthalmic treatments, but recently its use has been extended with great success to other departments. It is amongst others recommended by H. L. Swain[1], J. C. Sharp[2] and J. C. Connel[3] in chronic and acute affections of the nose and throat, such as rhinitic tumid conditions, tonsillitis, pharyngitis, laryngitis etc. The aqueous extract of the suprarenal capsule acts in these cases as a powerful astringent for the vessels and the erectile tissue; it is harmless even when introduced in considerable quantities and the local action of the extract can be reproduced any number of times in the same individual without blunting the tissue. The nose and throat are treated with 10—50 percent aqueous solutions, which are applied either with the brush or in the form of a spray. The suprarenal extract forms also an excellent astringent in haemorrhages following the extirpation of proliferations in the nose and throat. It is also, according to Lermitte[4], adapted for promptly arresting obstinate epistaxis, which is not tractable by other means and Grünbaum[5] concludes from his observations that this extract, though without appreciable influence upon the blood-pressure in the normal system, acts as an ideal haemostatic in haemorrhages of the mucous membrane of the digestive canal.

[Merck's Annual Report for 1899, p. 114.] *E. K.*

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[1] New York Medical Journal 1898, December 24.
[2] ibid. 1899, Augugt 12.
[3] Kingtou Medical Quarterly 1899, p. 318.
[4] British Medical Journal 1899, No. 1991, Epit. 468.
[5] Journal of Physiology 1899, May 11.

# Literary.

## Books and Pamphlets Received.

Verlag von Eugen Diederichs—Leipzig. Monographien zur deutschen Kulturgeschichte von Hermann Peters. Der Arzt und die Heilkunst in der deutschen Vergangenheit. Mit 153 Abbildungen und Beilagen nach den Originalen aus dem 15.—18. Jahrhundert.

Field Columbian Museum—Chicago. Plantae Utowanae. Plants collected in Bermuda, Porto Rico, St. Thomas, Culebras, Santo Domingo, Cuba, The Caymans, Cozumel, Yucatan and the Alacran Shoals, Dec. 1898 to March 1899. By C. F. Millspaugh. Botanical Series, Publication 43, Vol. 11, No. 1. Part 1, Catalogue of the Species. pp. 110. 1900.

Verlag von Ernst Guenther—Leipzig. Frauen im Reiche Aeskulaps. Ein Versuch zur Geschichte der Frau in der Medizin und Pharmazie unter Bezugnahme auf die Zukunft der modernen Aerztinnen und Apothekerinnen. Von Hermann Schelenz. pp. IV, 74. 1900.

University of State of New York—Albany. Professional Education in the United States by H. L. Taylor. Bulletin 5, October 1899, General, pp. 52. Bulletin 10, March 1900, Pharmacy, pp. 250.

Verlag von Vandenhoeck & Ruprecht—Goettingen. Jahresbericht der Pharmacie herausgegeben vom Deutschen Apothekerverein. Bearbeitet von H. Beckurts. Jahrgang 32, Erste Hälfte. pp. 336. Zweite Hälfte. pp. 535. 1899.

Verlag von Leopold Voss—Leipzig. Mikrochemische Technik, von H. Behrens. pp. VIII, 68. 1900.

## Reviews.

GOULD'S POCKET MEDICAL DICTIONARY. 30,000 words pronounced and defined. Fourth revised edition. 825 pages. P. Blakiston's Son & Co., Philadelphia. $1.00.

In the preparation of this work the publishers have done their part well. It is a handsome, compact, durable and somewhat useful book containing a large amount of information within a small space, but I think it falls somewhat short of its intended function as a dictionary.

The book already has a wide distribution, and the new revision with its many additions, being double the size of the original, should create an increased demand and enjoy a still larger sale than the old.

A pocket dictionary ought to be most useful to medical students during their college course, but the value of this one is much impaired by what would seem to be a needless lack of completeness and purity of language in many of its definitions.

When a student encounters a new medical term, he should be able to find in his dictionary not only the pronunciation with a clear and concise definition of the word, but also the Greek and Latin root with its meaning, which often is so suggestive as to produce a mental picture not obtained in any other way. No attempt is made to supply the origin of words.

For the purpose of illustration a few words will be taken from the body of the book. Phimosis—defined as "stenosis of the preputial orifice." This definition is good so far as it goes, but the word stenosis is not strong enough to convey the correct idea of the anatomical defect in question. It should be supplemented by a qualifying adjective, and would be still better if the Greek (φίμος a muzzle) were added also. The significance of a muzzle is well known to everyone, and would be exceedingly suggestive in this particular case.

Circumflex-definition "surrounding, as a vessel or nerve." The word surrounding implies inclosure on all sides and is misleading, as the circumflex vessels and nerves do not surround, but simply bend around structures; and the true meaning should be expressed by the Latin (circum—around, and flecto—I bend).

Dolichocephalic-definition "Long headed." To the average student the term long headed conveys an idea not of a long antero-posterio diameter in the cranium, but rather of a penetrating and discerning mind, and while he would not be likely to take the latter meaning from it as here used, yet he would not be satisfied with such a definition, and would be obliged to look up the word elsewhere.

Funnel Breast—"State in which the thorax narrows toward the abdomen." Such a definition explains absolutely nothing and simply leads to confusion. The first part of this word is self-explanatory, but the second part should be carefully defined in order to locate the funnel-shaped depression correctly over the steruum and not in the breast.

The present edition of this work is too large to become a constant pocket companion, and its incompleteness render it incapable of supplanting larger and more carefully edited dictionaries for use in the library.

*S. R. Boyce.*

# SUPPLEMENT.

## Scientific Organizations.

**United States Pharmacopœial Convention.** — The constitution and by-laws will be published in the printed proceedings of the Washington meeting, undoubtedly also in the new Pharmacopœia. Inasmuch as the adoption of a constitution and by-laws is a new departure, the readers of the Review will be desirous to learn something more about the new incorporated organization.

### Constitution.

ARTICLE I. 1. This organization shall be known as the United States Pharmacopœial Convention.

2. Its object shall be the revision and publication of the Pharmacopœia of the United States of America.

ARTICLE II. 1. This Convention shall consist of delegates elected by the following organizations: Incorporated Medical Colleges and Medical Schools connected with incorporated Colleges and Universities, Colleges of Pharmacy and Pharmaceutical Schools connected with incorporated Universities, incorporated State Medical Associations, incorporated State Pharmaceutical Associations, the American Medical Association, the American Pharmaceutical Association and the American Chemical Society, provided that each organization entitled to representation shall have been incorporated within, and in continuous operation, in the United States for at least five years before the time fixed for the decennial meeting of this Convention.

2. The Convention shall further consist of delegates appointed by the Surgeon-General of the United States Army, the Surgeon-General of the United States Navy, and the Surgeon-General of the United States Marine Hospital Service, and other organizations represented in the Convention of 1900, each body and each branch of the United States Government above cited shall be entitled to send three delegates to this Convention.

ARTICLE III. The officers of this Convention shall be a president, five vice-presidents, a secretary and assistant secretary and a treasurer, to be elected by ballot.

ARTICLE IV. The Convention shall elect a Nominating Committee, a Committee of Revision and a Board of Trustees.

ARTICLE V. The time for holding this meeting shall be upon the second Tuesday in May, in the first year of each decade ending in 0, and the place of meeting shall be in the City of Washington, D. C.

ARTICLE VI. Every proposition to alter or amend this Constitution shall be submitted in writing, and may be balloted for at the next decennial meeting, when, upon receiving the votes of three-fourths of the members present and voting it shall become a part of this Constitution.

Of the by-laws only chapters four and five are of special interest at the present time, chapter four being devoted to the newly organized Board of Trustees, chapter six describing the duties of the Committee of Revision as defined by the recent Convention.

## By-Laws.

### Of the Trustees.

ARTICLE I. The Board of Trustees shall consist of five delegates elected by the Convention together with the president of the Convention and the chairman of the Committee of Revision. Four members shall constitute a quorum.

ARTICLE II. It shall be the duty of the Board of Trustees to permanently invest the funds of the Convention; to execute contracts of agreements for the publication of the Pharmacopœia; to pay experts and others for services performed; to transact all business involving financial matters and to perform such duties as the Convention may from time to time direct.

ARTICLE III. Vacancies occuring in the Board of Trustees shall be filled by the Board of Trustees and the officers of the Convention, a majority of the votes of the whole number shall be necessary to elect a member to fill the vacancy. Delegates to the last decennial Convention are alone eligible for election to the Board of Trustees.

ARTICLE IV. The officers of the Board of Trustees shall consist of a chairman and secretary who shall be elected by ballot by the board. A majority of the votes of the board being sufficient to elect. The secretary need not be a member of the Board of Trustees. The secretary shall issue a notice of each meeting in writing. Syecial meetings of the Board of Trustees may be called by the chairman upon the written request of three members.

ARTICLE V. The Board of Trustees shall meet annually, or oftener if required. They shall receive no compensation for their services, but their traveling expenses and such expenses as are incured by their attendance at the meeting shall be paid from the funds of the Convention.

### Of the Committee of Revision.

ARTICLE I. The Committee of Revision shall consist of twenty-five members, to be elected by the Convention, together with the president of the Convention, ex officio. Fourteen shall constitute a quorum. Members may send their vote to the chairman of the committe in writing.

ARTICLE II. The Committee of Revision shall have entire charge of the preparation of the manuscript and reading proof for the revised Pharmacopœia, and shall, through its chairman, appoint such sub-committees, committees on research and experts as may be required for the proper revision of the work.

ARTICLE III. The Committee of Revision shall elect a chairman, two vice-chairmen and a secretary to serve until their successors are elected. The chairman shall direct the work of revision, receive and announce the votes, attend to the correspondence and prepare the final manuscript of the work. A vacancy occuring in the office of chairman shall be filled by the votes of the committee. a majority of the whole number being necessary to elect.

ARTICLE IV. The chairman of the Committee of Revision shall receive such salary for his services as may be determined by the Board of Trustees. He shall appoint all sub-committees, research committees and experts with the advice and consent of the Committee of Revision, and shall present to the Convention a report of the work of the Committee

of Revision, and shall hold office until his successor is elected.

The Committee of Revision shall receive such nominal compensation for their services as the Board of Trustees shall direct.

ARTICLE V. The members of the Committee of Revision shall be elected for their especial fitness and technical knowledge of the various subjects required for the proper revision of the work and shall hold office until their successors are appointed. Vacancies in the Committee of Revision may be filled by election by ballot by the Committee of Revision.

Chapter one of the by-laws outlines the duties of the President and Vice-Presidents; chapter two those of the Secretary and Assistant Secretary; chapter three those of the Treasurer; chapter six deals with the Nominating Committee; chapter seven with the Committee on Credentials and Arrangements; chapter eight with Members; and chapter nine with the Meetings. For the next nine years most of these provisions will be of little concern to the druggists of this country.

## American Pharmaceu ical Association.

### Officers for 1900—1901.

**I. Association at large**: President, John F. Patton, York, Pa.; First Vice-President, J. H. Beal, Scio, Ohio; Second Vice-President, J. W. Gayle, Frankfort, Ky., Third Vice-President, E.A. Ruddiman, Nashville, Tenn.; Secretary, Charles Caspari, Jr., Baltimore, Md., Treasurer, S. A. D. Sheppard, Boston, Mass.; Reporter on the Progress of Pharmacy, C. Lewis Diehl, Louisville, Ky.; New Members of the Council, L. C. Hopp, Cleveland; T. Roberts Baker, Richmond; W. C. Alpers, New York.

**II. Commercial Section**: Chairman, C. A. Rapelye, Hartford, Conn.; Secretary, F. W. Meissner, La Porte, Ind.; Associates, F. W. E. Stedem, Philadelphia; Henry Willis, Quebec; F. E. Holliday, Topeka, Kan.

**III. Scientific Section**: Chairman, Oscar Oldberg, Chicago; Secretary, Lyman F. Kebler, Philadelphia; Associate, W. A. Puckner.

**IV. Section on Education and Legislation**: Chairman, C. B. Lowe, Philadelphia; Secretary, J. A. Koch, Pittsburg.

**V. Section on Practical Pharmacy and Dispensing**: Chairman, H. P. Hynson, Baltimore; Secretary, F. W. E Stedem, Philadelphia; Associate, C. Lewis Diehl, Louisville.

### Papers.

**I. Commercial Sections:**

1. F. W. E. Stedem—Philadelphia: Methods of advertising for the retail druggist.
2. L. Emanuel–Pittsburg: A scheme to popularize the U. S. Pharmacopœia as the only means to combat quackery in medicine.
3. J. Jacobs—Atlanta: The commercial value of a pharmaceutical education.
4. F. G. Ryan—Philadelphia: The utility and advantage of a commercial course as part of the pharmaceutical curriculum.*
5. H. P. Hynson—Baltimore: Report of the Chairman of the Committee on Practical Pharmacy and Dispensing.†

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* Though but an informal talk, it should be considered the equivalent of a prepared paper.

† To all practical purposes this report also should be included among the papers read.

**II. Scientific Section.**

1. H. M. Gordin — Ann Arbor: Application of a modified alkalimetric method of assay of drugs and galenicals. See Pharm. Archives, 2, p. 314.
2. H. M. Gordin and A. B. Prescott — Ann Arbor: Short directions for the assay of opium. See Pharm. Archives, 2, p. 323.
3. P. Merrilll and J. O. Schlotterbeck — Ann Arbor: The alkaloids of *Bocconia cordata*.
4. H. M. Gordin and A. B. Prescott: Extraction and estimation of colchicine.
5. H. M. Gordin: Alkaloids of *Ceanothus americanus*. See p. 266.
6. A. Schneider — Chicago: Suggestions relative to the proposed introduction of powdered drugs into the U. S. P.
7. H. Kraemer and T. J. Watson—Philadelphia: Colorstandards for vegetable drugs in the U. S. A.
8. S. F. Kebler — Philadelphia: Notes on jalap roots examined the last six years.
9. E. M. Houghton—Detroit: The pharmacologic assay of drugs.
10. S. F. Kebler — Philadelphia: Physiological versus chemical and microscopic examination of drugs.
11. H. Kraemer — Philadelphia: The assay of drugs by the use of living plants.
12. A. Schneider — Chicago: The teaching of pharmaceutical bacteriology in colleges of pharmacy.
13. W. C. Alpers — Chicago: The alkaloids of *Sambucus canadensis*.
14. E. T. Gordon — U. S. Navy: Urine analysis by the pharmacist.
15. G. W. Parisen—Perth Amboy, N. J.: Urine analysis by the pharmacist.
16. F. W. E. Stedem — Philadelphia: The examination of urine, blood, sputum and like substances by the practical pharmacist.
17. E. L. Patch—Boston: Answers to some of the queries suggested by the Committee.
18. A. B. Stevens — Ann Arbor: Wild cherry bark and its preparations. (A continuation of the work reported in this journal, vol. ——, p. ——.
19. A. R. S. Dohme—Baltimore: A comparison in mydriatic value between *Atropa belladonna* and *Scopola carniolica* (?)
20. C. A. Mayo—New York: Notes on indigenous drugs.
21. H. Kraemer — Philadelphia: So-called ipecac, *Polygala angulata*.
22. C. A. Walter: Approximate analysis of *Eufatorium perfoliatum*.
23. S. W. Williams—East Orange, N. J.: What representative pharmacists and physicians think about plasters.
24. G. W. Boyd—Washington: Some of the reasons why compound spirit of ether and ethereal oil do not merit space in the U. S. Pharmacopoeia.
25. J. O. Schlotterbeck — Ann Arbor: The nature of commercial sanguinarine nitrate.
26. E. V. Hovell: Alcohol as an antidote for carbolic acid poisoning.
27. G. E. Barksdale: Cerate of extract of cantharides.
28. W. C. Alpers — New York: A new formula for aromatic spirit of ammonia.
29. J. W. England — Philadelphia: The recognition in the Pharmacopoeia of diphtheria anti-toxine.

**III. Section on Education and Legislation.**

1. Fr. Hoffmann—Berlin, Germany: A plea for the establishment of a national library of the history of chemistry and cognate sciences.
2. W. C. Alpers—New York: Preliminary education for students of colleges of pharmacy.
3. C. K. Partridge: The status of the drug trade of Maine under the prohibition laws of that state.
4. E. G. Eberle—Dallas, Tex.: Fluid extract labels.
5. S. Schultz — Baltimore: Erroneous prescriptions.
6. G. Simm:—Sale of liquors.

**Abstract of the Report of the Treasurer of the Am. Pharm. Ass'n. for nine months, July, 1, 1899, to April 1, 1899.**

| | Dr. | | Cr. |
|---|---|---|---|
| Cash on hand July 1, 1899 | $2649.10 | Proceedings | $2294.08 |
| Annual Dues | 3030.00 | Stenographer | 150.00 |
| Certificates | 40.00 | Journals | 45.64 |
| Proceedings | 37.30 | Salaries | 2675.00 |
| Badges | 56.45 | Premium on Treasurers's Bond | 12.50 |
| Formulary | 313.93 | Traveling Expenses | 69.56 |
| Interest | 89.73 | Sections | 77.66 |
| Ebert Fund | 28.00 | Committees | 72.83 |
| Life Membership Fees | 80.00 | Printing and Stationery | 182.59 |
| Proceeds of Note | 1000.00 | Insurance | 10.00 |
| | | Badges | 74.25 |
| | | Special Certificates | 280.24 |
| | | General Prizes | 150.00 |
| | | Ebert Prize | 28.00 |
| | | Medal for Geo. W. Kennedy | 12.00 |
| | | Miscellaneous | 129.99 |
| | | Formulary | 195.86 |
| | | Life Membership Fund | 80.00 |
| | | Cash on hand April 1, 1900, | 784.31 |
| | $7424.51 | | $7324.51 |

## Commercial.

**A National Need.***—There has been submitted to Congress a bill which proposes to merge the Office of Standard Weights and Measures in a new bureau, to be known as the National Standardization Bureau, whose function shall consist in the custody of the national standards; the comparison of standards used in scientific investigations, engineering, manufacturing, commerce and educational institutions with the standards adopted or recognized by the government; the construction, when necessary, of standards, their multiples and subdivisions; the testing and calibrations of standard measur-

* From the Scientific American. The Convention for the Revision of the U. S. Pharmacopœia passed a resolution favoring the establishment of such a Bureau.

ing apparatus; the solution of problems which arise in connection with standards; the determination of physical constants and the properties of materials, when such data are of great importance to scientific and manufacturing interests and are not to be obtained with sufficient accuracy elsewhere. The bureau is to exercise its functions for the government, for any state or municipal government within the United States, or for any scientific society, educational institution, firm, corporation or individual engaged in manufacturing or other pursuits requiring the use of a standard measuring instrument.

The importance of this bill is evident from a brief review of the conditions which call for the establishment of a bureau of this kind. It has always been acknowledged that the selection and care of the original standards of length, capacity and temperature, to which subjects attention, until recent years, has been almost exclusively confined, is one of the most important branches of scientific work and comes under the control of the government. The remarkable developments which have taken place of late years in pure and applied science have enlarged the field of such duties, until it now includes so many branches of physical and chemical research as to call for a complete laboratory, furnished with means for making the most refined measurements known to modern science, if the proposed Standardization Bureau is successfully to cope with its duties.

Germany, England, Austria and France have established bureaus and departments, more or less of the kind contemplated in this bill, and it only requires a study of the duties of these institutions, and the generous appropriations granted for their maintainance, to be satisfied of the importance, in foreign eyes, at least, of problems pertaining to standards and standard measuring apparatus. The necessity for a United States Bureau is proved by the extraordinary rapidity with which institutions of learning, laboratories and scientific societies are being established throughout the country, the rate of their growth never having been equaled in the history of any other nation. The work done in these institutions requires reliable standards for which, at present, they are obliged to go abroad. The introduction of accurate scientific methods into our various industries, moreover, calls for a multitude of standards of far greater accuracy than was formerly required. Thus to secure the most economical results it is often necessary to have an accurate knowledge of the high temperature of a furnace, or the low temperature of a refrigerating process; while important commercial transactions are based upon the reading of electrical apparatus, inaccuracies in which would result in great injustice and financial loss. There is a call, moreover, for many standards and instruments of precision in the different scientific departments of the government. Further proof of the necessity for this bureau is found in the recent acquisition of territory by the United States, which will involve readjustment of the system of weights and measures in the countries affected.

Hitherto the manufacturing of scientific apparatus and instruments of precision has been confined almost exclusively to foreign countries, al-

though it is satisfactory to note that this country promises before long not only to be able to supply its own needs, but to produce instruments fully equal to the best of foreign makers. It is absolutely essential, however, if American manufacturers are to secure the requisite degree of uniformity and accuracy, that they have access to a standardizing bureau such as is provided for the manufacturers in other countries. It is sincerely to be hoped that Congress will look favorably upon this bill and not only enlarge the function of the present office of Standard Weights and Measures, but provide it with an adequate laboratory, equipment, and working force.

"The introduction of the monopoly will bring about a thorough change in the production of camphor. The principal camphor districts of Formosa extend from Rato to Rinkipoh, a distance of about 80 to 90 Ri (Japanese miles), and from Hinan to Shukomaki (about 20 Ri), and comprise two mountain chains, the slopes of which are almost completely covered with camphor trees. Camphor is obtained by the condensation of the vapor given off by distilling the wood of the trees in specially constructed stills. At the present time there are about 1400 of these stills in Formosa. If the present system of producing camphor were continued, the existing forests of camphor trees would be cleared in about ten years, for in the course of time a regular system of clearing the forests has sprung into existence, and the clandestine production of camphor amounts annually to a very important quantity. The Government now intends first of all to introduce a regular system of forestry, and to prevent a total denudation of the forests by fixing an annual maximum production of camphor, and by proper afforestation. The number of stills hitherto in use will be largely decreased by the Government; up to the present no fewer than 2500 stills belonging to unauthorized camphor producers have been destroyed. The Government itself is building a large factory where operations are expected to commence in April of the present year. Here the camphor will be pressed and freed from all oil, water and dirt present in the crude article. Formosa camphor will therefore in future be placed on the market not in the crude state, but pressed, albeit not refined. The oil exuding from the crude camphor, or obtained by pressing the latter, contains from 25 to 30 percent of camphor, which is separated out by refining. This separation of the camphor residues from the oil will also take place at the Taipeh factory, but the refining of the oil itself will only be commenced at some future time. In the meantime the camphor oil will be consigned to two Japanese firms, who will ship it to Japan and refine it there."

**The Commerce of Drugs.** * — PAREIRA BRAVA. In this drug the conditions of its scarcity are much the same, but differ in some respects. The stems and roots of plants of this family resemble each other so closely as to deceive the uneducated eye, and

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* Continued from p. 178.

consequently spurious drugs often find their way into the market. Wholesale druggists who have already a stock of the root hesitate to buy the genuine when it does appear, unless they can be certain of its genuineness, the drug being in small demand. Hence the genuine drug is often sold at a loss to the shipper, and consequently becomes scarce and dear subsequently. In times of scarcity anything that resembles it is offered and generally purchased by those on the look out for "cheap" lots. In this way a Menispermaceous root from Bahia that was placed in packages of feathers was offered and sold, and a native medicinal root from Africa belonging to the *Menispermaceae* was also sold as *Pareira brava*. In such cases, therefore, it is no wonder that a drug loses its reputation.

Scammony. The cause of the inferior quality of scammony is in reality the demand in certain markets for an inferior article. Thus, Skilip scammony, containing only about 40 percent of resin, and worth barely half the price of the pure drug, is largely in demand for the South American market, where buyers will not pay the price of the pure drug. This has led to the introduction of the root and the resin prepared from it by using alcohol as a solvent, although here again the competition in prices has led to the production of two forms of the drug, one containing the resin only, the other some watery extract in addition, due to percolating with water after exhausting with spirit.

Saffron. The demand for a cheap saffron for coloring purposes, as in Cornwall, where buns and cakes are almost universally colored with it, has led to the regular supply of inferior (Alicante) saffron, at least 1 s. per oz. cheaper than the Valencia or best quality. It cannot be too widely recognized by pharmacists that cheapness in drugs means, as a rule, inferiority in quality. It naturally follows that those who sell cheaply must buy cheaply, and the public must suffer. Only dealers in large quantities can buy cheaply, and unless they have a rapid sale the expenses of warehousing and the deterioration of many vegetable drugs by keeping necessitates an increase in price. The publication of market prices in the journals of pharmacy, and the difference between these and the prices of drugs in the wholesale drug lists, leads to an attempt on the part of retailers and hospitals, etc., to obtain drugs at the lowest possible price, often leaving a bare working margin for expenses to the wholesale dealers. Thus many crude drugs, such as senna, myrrh, etc., have to be sifted free from dirt, screened into various sizes and picked by hand. Sarsaparilla has to be split by hand and cut by machinery. The loss in weight by these processes and the expenses of preparation, as well as the loss of interest on money lying idle in stock, all add to the cost of the drug. In the case of powder there is always a considerable loss of weight in drying before a drug can be powdered, the average amount of moisture lost on drying being 10 to 12 percent. Besides this, there is always a remainder or "gruffs" that has to be allowed for when a quantity of a drug is ground, which it does not pay to regrind and sift.

(To be continued.)

# Pharmaceutical Review.

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## Editorial.

Apropos of the revival of interest manifested in pharmaceutical education we desire to call attention to a change that is taking place in one of the important trades of this country. The New South appears to be aware that in order to forge its way into the front ranks of American industry it requires something more than cheap labor, namely educated brains and trained hands. Writing on the Cotton trade schools in the South, J. A. Stewart states in the Scientific American that "like textile manufacturers in foreign countries, manufacturers in the South are recognizing that the system of training workmen in the mill is ineffective, for the textile mill is an establishment whose chief purpose is production and not instruction. Consequently they have been awake to the necessity of establishing textile schools, from which are to come trained workmen and educated engineers for the carrying on of their large and growing textile industrial enterprises."

Concerning one of the schools, the writer states: "The curriculum of the school is as broad as its equipment is complete. There are courses in mathematics, English, drawing, mechanics, textile design, chemistry and dyeing, millwork and shopwork to be studied in four years. Special courses of two years in designing and weaving, carding and spinning, chemistry and dyeing are provided."

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In certain industries, manufacturers assist technical correspondence schools by buying a number of tickets and distributing them among their employees in responsible positions. A Wisconsin retail pharmacist recently suggested to the druggists of his state that they

assist their apprentices and clerks by paying for a course of studies during a summer session of six weeks. He claimed that such an unusual course would not only be a benefit to the apprentice and clerk, but to the preceptor as well. It is not to be expected that many druggists will act upon this suggestion, but it shows that the wide awake retail druggist with limited means may recognize as well as the manufacturer with his larger resources what the present time demands.

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It is worthy of note that recently representatives of two manufacturing firms have again raised their voice in behalf of better pharmaceutical education. Mr. James W. T. Knox, editor of The New Idea, writes on "A menace to pharmaceutical education" and scores those cramming institutions whose sole object it is to drill their students (?) to pass a state board examination. The other, Dr. Alfred R. L. Dohme, writes very forcibly on "The misfortune of pharmacy" in the Druggists' Circular and expresses the hope that the time will come when the old as well as the new universities of this country will offer courses in pharmacy, the giving of which is not to be dependent upon large numbers and the income derived therefrom.

When both pharmaceutical practitioner and manufacturer espouse the cause of pharmaceutical education we may well hope that the revival of interest in this subject will be productive of positive results. The pharmaceutical college does not exist for its own aggrandizement, but for the benefit of pharmacy in all its branches. Members of our calling, to whatever branch they belong, may well unite, therefore, in advancing that branch which must ever be progressing if the calling as such is not to remain behind in the rapid process of evolution.

The Convention of American Pharmaceutical Faculties, organized at Richmond last May, evidently enters upon its work under favorable auspices. If men of practical affairs advocate a higher and better pharmaceutical education by our universities and colleges, if state associations urge graduation from some reputable college as a prerequisite for the state board examinations, it will prove a pleasure indeed to pharmaceutical teachers to do their best to cooperate in this movement.

# On the Use of Inorganic Acids in the Preparation of Galenicals.*

By *Richard Strauss.*

## Hydrochloric Acid.

**Aconite.** Thomas Groves[1] in 1866 prepared a strong tincture of aconite by macerating coarsely powdered aconite root in methylated spirits containing 2½ ounces of strong hydrochloric acid to a pound of spirit.

**Conium.** E. R. Squibb[2] in 1870 recommended that the fluid extract of conium official in the U. S. P. be prepared according to either of the following methods.

1st. By crushing the unripe fruit with alcohol acidulated slightly with hydrochloric acid and expressing the juice, then evaporating by placing over lime.

2nd. By repercolation of powdered, unripe fruit with stronger alcohol acidulated with hydrochloric acid. In the U. S. P. 1870 Fluid Extract of Conium was recognized and hydrochloric acid added to the second portion of the percolate with the evident intention of fixing the volatile alkaloids for the subsequent process of evaporation. Martindale[3] in 1873 discussing the United States Pharmacopœia of 1870 does not see how any volatile alkaloids remain after drying and powdering, and thinks the acid is unnecessary. In the edition of the U. S. Pharmacopœia 1880 four preparations of conium, viz. the abstract,[4] the extract,[5] the fluid extract,[6] and the tincture[7] are directed to be made with the addition of hydrochloric acid. The Philadelphia College of Pharmacy,[8] somewhat previous to 1883, recommended a fluid extract of conium containing hydrochloric acid, but not in the proportion subsequently adopted by the Pharmacopœia.

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* Several months ago the editor pointed out that insufficient attention was being paid to the individuality of drugs in the preparation of galenicals. This is true both chemically and physiologically. Attention was also called to the changes that were taking place in the sciences which contribute or should contribute to the art of galenical pharmacy. Any information, old or new, that emphasizes the individual treatment of drugs or throws new light on the subject should, therefore, be welcome. The above summary shows to what extent the inorganic acids have been used in the attempt to place galenical preparations on a more scientific basis. *E. K.*

1 Pharm. Jour., 26, p. 121.
2 Proc. Am. Pharm. Assn., 18, p. 176.
3 Pharm. Jour., 33, p. 2.
4 U. S. Pharmacopœia, 1880, p. 2.
5 Ibidem, p. 112.
6 Ibidem, p. 113.
7 Ibidem, p. 311.
8 Am. Jour. Pharm., 55, p. 65.

*Extractum Conii Duplex*[9] is official in the Swiss Pharmacopœia, diluted hydrochloric acid being added before the usual menstruum of dilute alcohol.

**Cinchona.** The first recorded use of hydrochloric acid as a solvent for cinchona preparations is that by Ellis[10] in 1848 for preparing an extract of cinchona bark using one-half ounce of hydrochloric acid U. S. P. 1840 to each gallon of water, thus yielding a preparation containing a larger percentage of alkaloids. J. Jones[11] in 1852 prepared a fifty percent tincture of cinchona employing twice as much hydrochloric acid as directed by Ellis, also an aqueous menstruum. Heydenreich[12] in 1869 recommended the admission into the U. S. Pharmacopœia of a tincture of chinoidine similar to the one in the Prussian Pharmacopœia and containing hydrochloric acid. De Vrij[13] in 1872, in a letter to the Under Secretary for India, suggested a method for extracting the alkaloids from the bark using hydrochloric acid and sodium hydroxide. Wood[14] adopted De Vrij's method for the manufacture of a febrifuge on a large scale as it recommended itself for its economy. J. J. Broeker, in a series of experiments made in 1877 on the decoction of cinchona, finds that two parts of hydrochloric acid to eight parts of the decoction completely extracts the alkaloids. R. Rother[15] in 1873 recommended the use of hydrochloric acid, water and alcohol as a menstruum, as yielding a more concentrated and more permanent preparation than any other solvent. Husemann[16] in 1879 approved of De Vrij's[17] method for preparing the fluid and solid extracts of cinchona employing an acid (hydrochloric) aqueous menstruum. T. F. Main in 1879 prepared an elixir of cinchona according to a method similar to that of Ellis (1848) in preparing a solid extract of calisaya. In 1880 De Vrij[18] changed his menstruum, employing an acid aqueous menstruum and subsequently adding glycerin.

The use of hydrochloric acid in various cinchona preparations

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[9] Pharmacopœia Helvetica, 3rd ed., p. 97.
[10] Am. Jour. Pharm., 20, p. 15.
[11] Am. Jour. Pharm., 23, p. 218.
[12] Proc. A. Ph. A., 12, p. 374.
[13] Blue Book, IV, p. 126.
[14] Ibidem, p. 171.
[15] The Pharmacist, 6, p. 301.
[16] Zeitschrift d. ao. Apoth. Ver., 17, p. 321.
[17] Tydschr. voor Pharm., 1879, p. 258.
[18] Pharm. Zeitg., 28, p. 187.

was described by De Vrij[19] in 1881. Champigney in 1882 also favored an acid aqueous menstruum in extracting cinchona bark, but various objections were raised so that the process was not made official in the new French Codex. In 1883 B. H. Paul[20] criticized the B. P. process for preparing *Extractum Cinchonæ Liquidum* as yielding an article deficient in alkaloids. P. Wells[21] in 1883 favored the use of hydrochloric acid in preparing the various cinchona preparations. T. Redwood[22] in 1884 withdrew his defense of the B. P. menstruum and favored an acid aqueous menstruum in making the various cinchona preparations. Smith,[23] while using Broughton's method of extracting cinchona bark in 1884, substituted hydrochloric acid for sulphuric acid, and arrived at the conclusion that hydrochloric acid does not completely exhaust the alkaloids. G. Mee[24] in 1884 objected to the use of an acid menstruum in preparing cinchona preparations on physiological grounds. Redwood[25] in 1884 prepared an extract of red cinchona using hydrochloric acid, and from this prepared a liquid extract. This change was regarded as a decided improvement over processes of the B. P. preparations. He states that complete extraction of the alkaloids of the bark is secured. Paul,[26] also in 1884, objected to Redwood's process while Giles[27] in the same year partially agrees and partially dissents. Dunstan[27] in 1884 and Holmes[27] in the same year support Redwood's process as regards the use of hydrochloric acid.

Cownley[28] in 1884 prepared an extract according to Redwood's process and finds that the bark is only partially exhausted. The extract contains a relatively smaller percentage of quinine and a relatively larger percentage of amorphous alkaloids as indicated by the comparative analysis of the bark and extract. D. Gorrie[29] in 1884 modified the B. P. process by percolating with water first, then macerating with water acidulated with hydrochloric acid and again percolating with water. Redwood[30] in 1884 verified his former ex-

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19 Form. Dutch Soc. Advance. Pharm., 7th ed., 1881.
20 Pharm. Jour., 42, p. 737; 43, p. 810.
21 Ibidem, 43, pp. 40, 440.
22 Ibidem, 43, p. 797.
23 Ibidem, 44, p. 480.
24 Pharm. Jour., 44, p. 480.
25 Ibidem, 43, p. 797.
26 Ibidem, 43, p. 811.
27 Ibidem, 43, p. 812.
28 Ibidem, 43, p. 877.
29 Ibidem, 43, p. 897.
30 Ibidem, 43, p. 915.

periments and accounts for the discrepancy between his own and Cownley's work in the difference in the total alkaloids in bark used. J. O. Braithwaite,[31] also in 1884, used a bark containing approximately the same quantity of alkaloids as Redwood's, and using Redwood's process obtained results corroborating Cownley's. Redwood[32] in the same year again reports on liquid and solid extracts of cinchona prepared by macerating and percolating the bark with the acidulated menstruum, more strongly acid, however, than previously recommended by him. His results led him to adhere to his original process claiming to extract thereby 90 percent of the total alkaloids. In the discussion which followed Redwood's paper, Cownley[33] and Ekin[34] disagree with Redwood, while Wood[34] states that he used a method similar to Redwood's and was positive that more than 50 percent of the alkaloids were extracted.

*Extractum Cinchonæ Liquidum* was made official in the British Pharmacopœia of 1885[35] and was directed to be prepared according to Redwood's original process. Umney[36] in 1885, in discussing the official process, states that he lost 40 percent of the total alkaloids, while Moss[37] in 1885 reports the loss of 11½ percent of total alkaloids and E. R. Gravill[38] (1885) reports a loss of 15 percent of alkaloids which he partially recovers from the marc and adds to the original extract, thus making a loss of but 2¾ to 3 percent of alkaloids. J. E. De Vrij[39] in 1885 reviewed his former work with hydrochloric acid on cinchona and shows that the acid will extract all alkaloids, but must be used in molecular quantities and in the cold. He also states that hydrochloric acid dissolves a substance which acts like an alkaloid, but is not. D. Kerner used a secret method for extracting the alkaloids, which in De Vrij's opinion is the only other method that can be profitably applied to the manufacture of the cinchona alkaloids, but which process De Vrij does not describe. W. W. Granger[40] in 1885 prepared elixir of calisaya bark by percolating with acidulated (hydrochloric acid) aqueous menstruum and precipitating the

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[31] Pharm. Jour., 43, p. 985.
[32] Ibidem, 44, p. 441.
[33] Ibidem, 44, p. 453.
[34] Ibidem, 44, p. 454.
[35] British Pharmacopœia, 1885, p. 153.
[36] Pharm. Jour., 45, p. 407.
[37] Ibidem, 45, p. 454.
[38] Ibidem, 46, p. 455.
[39] Chem. Drug., Aug. 15, 1885.
[40] Pharm. Rec., 5, p. 413.

alkaloids with sodium hydroxide and dissolving the precipitate in acetic or citric acids. B. H. Paul[41] in 1886 modified the B. P. 1885 process for preparing extract of cinchona by macerating the bark with the acidulated menstruum and then expressing the liquid. H. H. Millhause[42] in 1886 reviewed the work previously done on the extraction of the cinchona alkaloids and affirms that the alcohol and lime extraction is preferable to the hydrochloric acid extraction. A. C. Abraham[43] in 1887 extracted the alkaloids from cinchona by boiling water and then with dilute hydrochloric acid, using double the quantity called for in the B. P. 1885, and finds an increase of 50 percent in the alkaloids over the official process. H. Nanning[44] in 1888 used De Vrij's method but concentrated in vacuo. M. C. Traube[45] in 1890 advocated a method nearly identical to Nanning's, differing only in unessential details. De Vrij[46] in 1891 also gave a method for concentrating in vacuo, which has been made official in Holland. C. W. Lucas[47] in 1894 advised the use of elevated temperatures in making *Extractum Cinchonæ Liquidum* B. P. R. A. Cripps[48] in 1895 prepared *Ex. Cinchonæ Liq.* B. P. by repercolation. Decoction of cinchona[49] (1893) made with hydrochloric acid is official in the Danish Pharmacopœia, as is also the fluid extract. Abraham[50] in 1895 reiterated his previous opinion regarding the use of boiling water and hydrochloric acid as a menstruum. *Extractum Cinchonæ Fluidum* is official in the Swiss Pharmacopœia (1893), hydrochloric acid being used as a menstruum.[51] Decoction of cinchona and fluid extract of cinchona made with hydrochloric acid are official in the Norwegian Pharmacopœia (1895).[52] R. Votjek[53] in 1896 recommended a modification of the official menstruum for *Tinctura Chinæ Comp.* replacing diluted alcohol by cinnamon water and hydrochloric acid.

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41 Pharm. Jour., 45, p. 561.
42 Ibidem, 45, p. 959.
43 Ibidem, 46, p. 897.
44 Pharm. Centralbl., 29, p. 173.
45 Schw. Wochenschr. f. Pharm., 28, p. 377.
46 Supplement Pharm. Netherland, 1891, p. 81.
47 Pharm. Jour., 53, p. 665.
48 Ibidem, 54, p. 1169.
49 Danish Pharmacopœia, 1893, pp. 109, 141.
50 Pharm. Jour., 55, p. 370.
51 Pharmacopœia Helvetica, 1893, 3rd ed., p. 93.
52 Pharmacopœia Norweguea, 3rd ed., pp. 76, 89.
53 Zeitsch. Oest. Apoth. Ver., 34. p. 532.

# Acetanilid.

By *Charles W. Gorr.*

## Chemical Properties.[1]

The decomposition of acetanilid in heated tubes was studied by Nietzke in 1877,[2] who obtained, among other substances, symmetric di-phenyl urea, the formation of which may be explained by the following equation:

$$2C_6H_5NHCOCH_3 = \begin{matrix} C_6H_5HN \\ C_6H_5HN \end{matrix} > CO + CH_3COCH_3$$

Acetone, however, could not be obtained.

Pure acetanilid is not decomposed by heating with pure water for a long time. Meyer (1882).[3]

Chlorine acts on acetanilid suspended in water at low temperatures, with the formation of 1, 2, 3, dichloracetanilid, melting at 140°. Witt (1874).[4]

Chlorine from potassium chlorate and hydrochloric acid acts on acetanilid in glacial acetic acid, in like manner forming a dichloride. Witt (1875),[5] Beilstein and Kurbatow (1875).[6] Chlorine from chlorinated lime acting in solution of glacial acetic acid and alcohol at 50° C., forms a monochloride melting at 162°,[7] as long as there is an excess of acetanilid, and then dichloracetanilid. Witt (1875).[8]

Chlorine from chlorinated lime and acetic acid (Bender,[9] 1886) or from hypo-chlorous acid (Schlossen,[10] 1895) acting on concentrated aqueous solutions, at low temperatures substitutes the imido hydrogen, forming $C_6H_5NCl.COCH_3$, which melts at 91°[11] and which when heated to 172° is converted to the parachloracetanilid.

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[1] For history, methods of formation and preparation, and physical properties see Pharm. Rev., 17, p. 295.

[2] Berichte, 10, p. 476.

[3] Berichte, 15, p. 1977.

[4] Berichte, 7, p. 1601.

[5] Berichte, 8, p. 144 (foot-note).

[6] Berichte, 8, p. 1655.

[7] Beilstein, II, p. 363, gives the melting point of the paramonochloracetanilid as 172.5°; ortho- as 87—88°; and meta- 72.5°.

[8] Berichte, 8, p. 1226.

[9] Berichte, 19, p. 2272.

[10] Berichte, 28, p. 3268.

[11] Castoro in 1898 (Chem. Centrbl., 70, I, p. 275; from Gaz. Chim. Ital. 28, II, p. 312) reports that he could not obtain the chloride described by Bender but that he obtained parachloracetanilid, and later 1,4-dichloracetanilid. Schlossen evidently had already found difficulty with Bender's method and therefore suggested a change. Both methods were tried by the writer a number of times with various modifications, but no compound melting at 91° could be obtained.

Chlorine water did not act as stated by Platt when a cold solution was used which had not been hydrolized. High temperatures as well as low temperatures were employed after the addition of the chlorine, while the solution of acetanilid was effected in the cold.

When the solution of acetanilid had been hydrolized with the aid of heat, the

Chlorine water added to a solution of acetanilid in hydrochloric acid gives a dark blue coloration, which afterwards fades. A similar reaction is obtained by substituting for chlorine water a filtered solution of bleaching powder. Platt (1896).[12]

Bromine when acting upon acetanilid in aqueous suspension forms an acetbromanilid, some dibromacetanilid and, unless the temperature is kept low, hydrolysis sets in due to the presence of hydrobromic acid, when tribromanilid is formed. Remmers (1874)[13] and Guercke (1875)[14]. The solubility in water can be increased with the aid of alcohol, and bromine water be added until the yellow color does not disappear immediately, and even heat applied without interfering with the monobrom substitution. Blacher (1895).[15] By treating a saturated aqueous solution of acetanilid with alkaline hypobromite solution acetparabromanilid is precipitated upon acidulation with acetic acid. Schlossen (1895).[16]

In glacial acetic acid solution acetanilid yields with the theoretical quantity of bromine acetmonobromaniline only. Remmers (1874).[17] The derivative formed is the para substitution product. Huebner (1881).[18] (Compare also Beilstein, 3rd ed., 2, p. 364, not to be confounded with monobromacetanilid, $CH_2BrCONHC_6H_5$ of p. 363.) Others who have acted on acetanilid with bromine, but do not give conditions are Armstrong and Prevot (1874);[19] Winter and Grubemann (1874);[20] Huebner (1874);[21] Cheyne (1888).[22]

Chloriodine acts on acetanilid in glacial acetic acid with the formation of acet-p-iodoanilid. Michael and Norton (1878).[23]

When dry hydrogen chloride is passed into an acetone solution of the acetanilid, the hydrochloride $(C_6H_5NHCOCH_3)_2HCl$ results.

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addition of chlorine water caused a purplish-pink tint. The fact that the solution was hydrolized was established by means of the indophenol test.

When chlorinated lime solution is used (see directions of Platt above) no change is produced when little of the reagent is added to the unhydrolized solution of acetanilid. The solution of a larger amount of the reagent causes the separation of a fine white precipitate but produces no color. The indo-phenol test showed the presence of but a mere trace of aniline.

If the acetanilid solution is first hydrolized the addition of chlorinated lime solutions causes the formation of a fine precipitate which, however, dissolves again almost immediately, the solution becoming pink, changing rapidly to lavender. The intensity of the color depends upon the amount of the reagent added. A large excess of the latter will even cause a turbidity of the solution Hydrolysis was detected by the indo-phenol test for aniline.

12 Jour. Am. Chem. Soc., 18, p. 142.
13 Berichte, 7, p. 348.
14 Berichte, 8, p. 1114.
15 Berichte, 28, p. 2359.
16 Berichte, 28, p. 3265.
17 Ibidem, 7, p. 346.
18 Annalen, 209, p. 355.
19 Berichte, 7, p. 406.
20 Ibidem, 7, p. 417.
21 Ibidem, 7, p. 1087.
22 Zeitsch. d. allg. öst. Apt. Ver., 26, p. 115.
23 Berichte, 11, p. 108.

Noelting and Weingärtner (1885).[24] From chloroform, ether or acetic ether solution the 1:1 hydrochloride is obtained. Knorr (1888),[25] Wheeler, Barnes and Pratt (1897).[26] A hydrochloride evidently is also formed when acetanilid is acted upon by concentrated (aqueous) hydrochloric acid. Ritsert (1889)[27] and Warnecke (1890).[28] Dry hydrochloric acid gas passed into melted acetanilid at 150° causes the formation of diphenylacetamidine according to the following reaction:

$$\begin{array}{l} CH_3C\boxed{O}NHC_6H_5 \\ \quad\;\; | \quad\; | \\ \boxed{CH_3CO}\boxed{N\boxed{H}}C_6H_5 \end{array} = CH_3C\begin{array}{l} NHC_6H_5 \\ \\ NC_6H_5 \end{array} + CH_3COOH.$$ Wallach (1882).[29]

The addition of hydrogen bromide to an alcohol ethereal solution of acetanilid results in the formation of the analogous salt $(C_6H_5NH.CO.CH_3)_2HBr$. Topin (1895).[30] The 1:1 hydrobromide was prepared by Wheeler, Barnes and Pratt (1897);[31] also by Bishoff (1898).[32] The 1:1 hydrogen bromide of acetanilid was also obtained by Bischoff (1898)[33] by the action of brompropionic bromide on acetanilid.

The 2:1 hydriodide[34] was obtained when hydrogen iodide was passed into a chloroform or ethyl acetate solution of acetanilid. The 1:1 hydriodide could not be obtained. Wheeler, Barnes and Pratt (1897)[35]

In the presence of water the hydrogen halides (HCl, Warnecke,[36] HBr, Remmers,[37]) act as hydrolizing agents, splitting acetanilid into aniline and acetic acid.

When boiled with dilute sulphuric acid, acetanilid is readily hydrolized to acetic acid and aniline-sulphate. Merz and Weith (1869).[38] Concentrated sulphuric acid does not hydrolize it at 100°. Hantsch and Freese (1894).[39]

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[24] Berichte, 18, p. 1340.
[25] Annalen, 245, p. 375 (foo note). Physical and chemical properties are not given. The decomposition products resulting on heating the salt were also studied.
[26] Am. Chem. Jour., 19, p. 676.
[27] Pharm. Ztg., 34, p. 546.
[28] Ibidem, 35, p. 759.
[29] Berichte, 15, p. 208.
[30] Ann. Chim. Phys. [7] 5, p. 99. Physical properties: platinum double salts etc. studied. The bromine addition products of the hydrobromides, with 2, 4 and 6 bromine atoms were studied by Wheeler and Walden (Am. Chem. Jour., 18, p. 88).
[31] Am. Chem. Jour., 19, p. 677.
[32] Berichte, 31, p. 2847.
[33] Ibidem, 31, p. 2853.
[34] The perhalides of this salt were obtained when treated with iodine by Wheeler, Barnes and Pratt. (Am. Chem. Jour., 18, p. 86.) Also by Wheeler, Barnes and Platt. Ibidem, 19, p. 678.
[35] Ibidem.
[36] Pharm. Ztg., 35, p. 759.
[37] Berichte, 7, p. 346.
[38] Ibidem, 2, p. 433.
[39] Ibidem, 27, p. 2529.

Two molecules of acetanilid acted upon by one molecule of phosphorus pentachloride yield ethenyl diphenyldiamine according to the following reaction:

$$2C_6H_5NHCOCH_3 + PCl_5 = POCl_3 + HCl + CH_3COCl + (C_6H_5)_2N.NHC_2H_3$$

Lippmann (1874).*

Wallach and Hoffmann† (1875) obtained an acetanilidimidchloride by the action of phosphorus pentachloride on acetanilid under certain conditions preventing the presence of free aniline which would convert this imidchloride into ethylenyldiphenyldiamine.‡ Water reacts violently with this imidchloride resulting in the formation of acetanilid.

$$C_6H_5N:C.ClH_3.Cl + H_2O = CH_3CONHC_6H_5 + HCl$$ Wallach§ (1877).

Wallach (1875)¶ summarizes the reactions of phosphorus pentachloride in the following reactions:

$$CH_3CONH.C_6H_5 + PCl_5 = CH_3CCl_2NHC_6H_5 + POCl_3$$
$$CH_3CCl_2NHC_6H_5 = CH_3CCl:NC_6H_5 + HCl$$
$$2C_8H_8ClN = C_{16}H_{15}ClN_2 + HCl$$
$$C_{16}H_{15}ClN_2 = C_{16}H_{14}N_2 + HCl$$

Again in 1882 Wallach,** avoiding a rise in temperature, found one molecule of acetanilid reacting with one molecule of phosphorus pentachloride formed an imidchloride of the formula $CH_3CCl_2NHC_6H_5$ without the liberation of hydrochloric acid. When heating these proportions of acetanilid and the pentachloride from the beginning, the liberated hydrochloric acid will convert the acetanilid not acted upon by the pentachloride, to acetdiphenyldiamine.

Michael*** in 1887 treated in the cold three molecules of pentachloride of phosphorus with one molecule of acetanilid. After the reaction had ceased and the mass deprived of free hydrochloric acid by means of heating on a water bath, a crystalline compound was obtained, which melted at 116.5—117° and upon analysis proved to have the empirical formula $C_8H_8Cl_2N_2$. When the mass was allowed to remain in a warm place instead of heating on a water bath a

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* Berichte, 7, p. 540.
† Ibidem, 8, p. 315.
‡ The reaction is supposed to take place as follows:

$$CH_3CONHC_6H_5 + PCl_5 = CH_3CCl_2NH.C_6H_5 + POCl_3$$
$$CH_3CCl_2N.C_6H_5 = CH_3CCl:NC_6H_5 + HCl$$
$$CH_3CCl:NC_6H_5 + NH_2C_6H_5 = C_6H_5NC(CH_3)NHC_6H_5HCl$$ (Annalen, 184, p. 90.)

§ Annalen, 184, p. 89.
¶ Berichte, 8, p. 1572.
** Annalen, 214, p. 198.
*** Am. Chem. Jour., 9, p. 217.

different compound was obtained having the formula $C_{38}H_{36}C_7N_4$ and melting at 210°. The constitution of these substances is not given.

When this mass of chlorides was treated with hydrogen sulphide, thioacetanilid melting at 74.5—76° was obtained by Leo* (1877). Hoffmann† (1878) prepared the thioacetanilid of Leo by treating acetanilid with phosphorus sulphide.

When heated with sulphur dichloride at 100°, acetanilid yields a trithioacetanilid, of the formula: $C_2H_3O.NH.C_6H_4S.S.S.C_6H_4NH.C_2H_3O$, melting at 213—214.5°, and a dithioacetanilid, of the formula: $(C_2H_3ONHC_6H_5)_2S_2$, melting at 215—217°. Schmidt‡ (1878).

Nitrogen chloride in benzene solution dissolves acetanilid with the formation of monochloracetanilid, melting at 174°, supposed to be the para compound. Hentschel§ (1897). A glacial acetic acid solution of acetanilid saturated with nitrosylchloride (NOCl) yields p-chloracetanilid melting at 173° as the only compound. By protracted action the nitroso compound, $C_6H_3Cl_2N-NO-C_2H_3O$, melting at 142.5° appears to be formed. Tilden and Miller¶ (1894).

Acetanilid nitrated with a mixture of nitric and sulphuric acids yields dinitroacetanilid. Rudnew** (1871), Stoever*** (1874) and Huebner†† (1874) mention the possibility of the formation of two isonitroacetanilids by the nitration of acetanilid.

If acetanilid be dissolved in concentrated nitric acid and the solution poured into water, a nitroacetanilid will separate which will upon remaining in the mixture liberate a gas and an odor of nitrobenzene when the nitro compound will be converted to a yellow substance of unknown composition. Walker and Zincke (1872).†††

Dilute nitric acid acting on acetanilid causes the separation of nitroacetanilid (para) melting at 208°, while the ortho compound remaining in solution, melts at 78°. Huebner and Grethen‡‡ (1876) and Beilstein and Kurbatow‡‡‡ (1879). When repeatedly evaporated

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* Berichte, 10, p. 2134.
† Ibidem, 11, p. 339.
‡ Ibidem, 11, p. 1170.
§ Ibidem, 30, p. 2645.
¶ Chem. News, 69, p. 201.
** Berichte, 4, p. 409.
*** Ibidem, 7. p. 464.
†† Ibidem, 7, p. 1088.
††† Ibidem, 5, p. 114.
‡‡ Ibidem, 9, p. 775.
‡‡‡ Annalen, 197, p. 83.

to dryness with fuming nitric acid, a compound results, which is spontaneously combustible. Kunz-Krause* (1898).

Acetanilid acted upon by fuming sulphuric acid and nitric acid causes the formation of o-nitraniline sulphonic acid. Nietzki and Lerch† (1888).

The action of sulphuryl chloride was studied by Wenghoeffen‡ (1878). The reaction takes place as follows:

$$C_6H_5NHCOCH_3 + SO_2Cl_2 = C_8H_7NSO_3 + 2HCl.$$

The reaction with ethyl sulphuric chloride is represented by the following equation:

$$2C_6H_4NHCOCH_3 + C_2H_5OSO_2Cl = C_{16}H_{16}N_2SO_4\,\S + C_2H_5Cl + H_2O.$$

When nitrous acid (gas) is passed into a cold solution of acetanilid in glacial acetic acid until the solution becomes green due to an excess of nitrous acid, nitroso acetanilid is formed, which can be separated as a light yellow colored precipitate by pouring the solution into water. This melts at 40—41°.¶ The reaction takes place as follows:

$$C_6H_5NHCOCH_3 + HNO = H_2O + C_6H_5N.NO.COCH_3.$$

Fischer** (1876). Bamberger*** (1894).

Nitrous acid acting on acetanilid dissolved in glacial acetic acid and benzene causes the formation of diphenyl melting at 70—71°. Substituting toluene for benzene, phenyltoluene was obtained. Bamberger†† (1897).

Hofmann††† (1878) reports the formation of thioacetanilid of Leo when acetanilid is acted upon by phosphorus pentasulphide.

Boiling potassium hardly affects the acetanilid, but melted potassium causes separation of aniline. Gerhardt‡‡ (1852). Sodium acts on acetanilid in xylene solution with the formation of sodium acetanilid. Bunge‡‡‡ (1870). Sodium and methyl iodide act on acetanilid in xylene suspension with the formation of methyl acetanilid, which is decomposed to methyl aniline as follows:

$$C_6H_5NHCOCH_3 + Na = C_6H_5NNaCOCH_3 + H.$$

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* Ph. Centrh., 39, p. 865.
† Berichte, 21, p. 3220.
‡ Ibidem, 10, p. 443. Ibidem, 11, p. 149.
§ The constitution of this product is given as follows:

$$CH_3CO.NH.C_6H_4SO_2.C_6H_4.NHCOCH_3.$$

See also Berichte, 11, p. 149, where in correspondence Pinner states that Wenghoeffen obtained the mono and dichlor-acetanilid by treating acetanilid with sulphuryl chloride.
¶ Bamberger, loc. cit., corrects this melting point to 50—51°.
** Berichte, 9, p. 463. Physical properties are given.
*** Ibidem, 30, p. 366. Ibidem, 27, p. 915.
†† Ibidem, 30, p. 368.
††† Ibidem, 11, p. 339.
‡‡ Annalen, 87, p. 167.
‡‡‡ Annalen Suppl., 7, p. 122.

$$C_6H_5NNaC_2H_3O + ICH_3 = NaI + C_6H_5N.CH_3.COCH_3.$$
$$C_6H_5N.CH_3.COCH_3 + H_2O = C_6H_5NH.CH_3 + CH_3COOH.$$

Hepp* (1877).

On heating acetanilid with sulphur a reaction takes place in a peculiar manner giving rise to an oxalyl compound of the formula:

$$C_6H_4\begin{matrix}\diagup N \diagdown \\ \diagdown S \diagup\end{matrix}C-C\begin{matrix}\diagup\!\!\diagup N \diagdown \\ \diagdown S \diagup\end{matrix}C_6H_4$$

Armstrong and Hoffmann† (1893).

According to Jackson‡ (1875), zinc chloride forms with acetanilid a double salt of aniline $(C_6H_5NH_2)_2.ZnCl_2$, which when heated is converted to an aniline-containing oil. Fischer and Rudolf§ (1882) obtained a yellow dyestuff, flavanilin¶ by heating acetanilid and zinc chloride at 250° to 270°. The reaction takes place as follows:

$$2C_8H_9NO = C_{16}H_{14}N_2 + 2H_2O.$$

When acetanilid is melted together with mercuric oxide, mercury acetanilid is obtained having the formula $(C_2H_3ONC_6H_5)_2Hg$. Oppenheim and Pfaff** (1874).

Klein*** (1887) found that mercuric chloride did not affect cold solutions of acetanilid. Piccinini,†† however, in 1894, obtained a diacetanilid by treating a boiling aqueous solution of mercuric chloride (1 mol.) and acetanilid (2 mol.) with soda solution until strongly alkaline. This compound differs from the para compound of Pesci††† (1894) in melting point and in that it is decomposed to acetanilid when treated either with sodium thiosulphate, potassium iodide or ammonium bromide, while the para compound remains unaffected even at 100°. According to Wheeler and McFarland‡‡ (1896) the formula of this compound can be represented as follows:

$$C_6H_5N(COCH_3)HgN(COCH_3)C_6H_5.$$

The action of mercuric acetate on boiling aqueous solutions of acetanilid was studied by Pesci††† (1894) who obtained p-mercurio-di-phenylene diacetylmercurio diammonium-acetate of the formula:

$$Hg\begin{matrix}\diagup C_6H_4\text{-}NHAc \diagdown \\ \diagdown C_6H_4\text{-}NHAc \diagup\end{matrix}Hg(C_2H_3O_2)$$

Aluminium chloride acting on acetanilid yields a crystalline com-

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* Berichte, 10, p. 327.
† Jour. Chem. Soc., 68, (i), p. 713.
‡ Berichte, 8, p. 1171.
§ Ibidem, 15, p. 1500.
¶ Physical and chemical properties are also given.
** Berichte, 7, p. 624.
*** Ibidem, 11, p. 743.
†† Gazz. Chim. Ital., 24 (ii), p. 453.
††† Ibid., 24 (ii), p. 449.
‡‡ Am. Chem. Jour., 18, p. 540.

pound of the formula: $(C_8H_9NO)_2Al_2Cl_6$ melting at about 40° and insoluble in solvents which will not decompose it, such as carbon disulphide, ligroin or chloroform. Water or alcohol split it up into its components, i. e. acetanilid and aluminium chloride. Perrier* (1894).

Acetanilid acts on mixtures of ferric salts as a weak reducing agent. Schaer† (1896).

When heated with alcohol in sealed tubes at 200°, ethyl aniline is formed according to the reaction: $CH_3CONHC_6H_5 + C_2H_5OH = C_2H_5NHC_6H_5 + CH_3COOH$. Baubigny‡ (1886). Methyl, amyl and benzyl alcohols act the same way when similarly treated. Baubigny§ (1882). Acetanilid and sodium ethylate, heated in sealed tubes, yield ethyl aniline as follows: $CH_3CONHC_6H_5 + C_2H_5ONa = C_6H_5NHC_2H_5 + CH_3COONa$. Baubigny¶ (1886) states that sodium acetanilid is first formed, which by the action of an excess of the alcohol is converted to ethyl aniline and sodium acetate.

When acetanilid was heated at 170° to 200° for 36 hours in a closed tube with sodium dissolved in absolute alcohol, ethyl aniline was obtained. Heating in a retort, however, at 160°, acetanilid and sodium ethylate, sodium acetanilid was obtained as follows: $C_6H_5NHCOCH_3 + NaOC_2H_5 = C_6H_5NNaCOCH_3 + C_2H_5OH$. Siefert** (1885).

By treating acetanilid with sodium ethylate and an oxalic ester, Wislicenus and Sattler*** (1891) obtained two derivatives, giving the reactions as follows:

$$\begin{matrix} COOC_2H_5 \\ | \\ COOC_2H_5 \end{matrix} + CH_3CONHC_6H_5 + NaOC_2H_5 = \begin{matrix} COCOOC_2H_5 \\ | \\ CHNaCONHC_6H_5 \end{matrix} + 2C_2H_5OH.$$

$$\underbrace{C_6H_{10}O_4}_{\text{oxalic ester}} + \underbrace{C_8H_9NO}_{\text{acetanilid}} + \underbrace{NaOC_2H_5}_{\text{sod. ethylate}} = C_{10}H_6NO_3Na + \underbrace{2C_2H_5OH}_{\text{alcohol.}}$$

The following structural formula has been given to the $C_{10}H_6NO_3Na$ compound: $\begin{matrix} CO{-}CO \\ CHNaCO \end{matrix}\!\!>\!N{-}C_6H_5$.

Weith†† (1873) distilled acetanilid with sodium phenylate, obtaining aniline, acetone and several other substances.

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* Comptes rend., 119, p. 90.
† Archiv d. Pharm., 234, p. 362.
‡ Comptes rend., 103, p. 149.
§ Ibid., 95, p. 646.
¶ Ibid., 103, p. 149.
** Berichte, 18, p. 1356.
*** Ibidem, 24, p. 1245.
†† Berichte, 6. p. 966.

The addition of an acet radical to acetanilid was studied by Koehler* (1889). Acetanilid heated for forty-five hours with glacial acetic acid and a condensing agent, such as phosphoric acid, forms a mass which when dissolved in dilute hydrochloric acid and upon the addition of an alkali will yield amidoacetophenone. The reaction takes place as follows:

$$C_6H_5NHCOCH_3 + HOCOCH_3 = CH_3CO.C_6H_4.NH.COCH_3$$

$$CH_3COC_6H_4NHCOCH_3 + HOH = CH_3COC_6H_4NH_2 + CH_3COOH.$$

Kay† (1893) was the first to announce the preparation of diacetanilid from acetanilid. Equal quantities of acetanilid and ethyl acetate were heated for several hours at 170° to 180°. Diacetanilid‡ was formed with the liberation of hydrochloric acid. Bistrzycki and Ulffers§ (1894) also obtained diacetanilid by heating for eight to ten hours acetanilid (2 mol.) with acetic acid anhydride (4 mol.). Compare Wheeler¶ (1896) on diacid anilids.

Acetanilid when acted upon by acetone and a condensing agent, such as zinc chloride, according to Riehm** (1887), yields dimethyl chinolin.

Acetanilid treated with hydroxylamine yields, according to Hoffmann*** (1889), acet hydroxamic acid and aniline.

The action of phenylhydrazine was studied by Fischer;†† that of benzoyl chloride by Meldola and Solomon††† (1888); heating with succinyl chloride by Ferricks and Meyer‡‡ (1877); the action of picric acid by Topin‡‡‡ (1895); its reduction to ethyl aniline by electrolysis by Baillie and Tafel§§ (1899).

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* Berichte, Ref. 24, p. 685.
† Berichte, 26, p. 2854.
‡ Phys. prop. also given by Kay l. c. The toxic properties of diacetanilid were found to be equivalent to acetanilid so that there is no therapeutic advantage in using the former in preference to the latter. Hildebrandt (Berichte, 27, p. 91).
§ Berichte, 27, p. 91.
¶ Am. Chem. Journ., 18, p. 697.
** Annalen, 238, p. 9.
*** Berichte, 22, p. 2856.
†† Annalen, 242, p. 380.
††† Jour. Chem. Soc., 1888, p. 780.
‡‡ Berichte, 10, p 2165.
‡‡‡ Chem. Centrlbl., 66, p. 1112.
§§ Berichte, 22, p. 68.

# Notes on the Plague in China and India.*

By *Joseph Marshall Flint.*

Aside from the recent outbreaks of Bubonic Plague which have attracted such widespread interest in themselves, there is something in the historical associations of the disease that has lent to them an added interest. Probably no other medical subject has been so extensively used for literary material as the Pest, for the dramatic and harrowing episodes of the great epidemics have afforded ideal material for descriptive writers who have availed themselves of its riches again and again. Thus Boccaccio, Defoe, Gibbon, Hodge, and others† have described the havoc it played in Europe when it was known as the Black Death. Accordingly, when, with the Philippine Commission, in Hong Kong and later in India we had an opportunity of seeing the disease, it was evident that the facts of its epidemiology and environment were quite as interesting and certainly more dramatic than the clinical and pathological features of the disease itself.

The last recorded epidemic of note was that which occurred in Egypt in about 1825, and from that time to the outbreak in Hong-Kong, the disease has been endemic in the central portion of China. Not much attention was paid to it, however, until Hopper‡ noted its existence in Yunnan. He says: "Despite of such a favorable climate, Méng-tzü, in common with other parts of Yunnan, has suffered annually for a period of years from the plague, a kind of malignant fever, fatal in a few days, having as one of its symptoms a hard swelling in the neck, in the armpits, or in the groin, which has carried off a number of its inhabitants. On approach of the epidemic, the first victims are rats, which, fearless of human beings rush madly into their presence, and after capering around the room fall dead at their feet." From Yunnan the disease traveled to Pakhoi by one of the common trade routes, where according to Lowry and Horder, it has been endemic for over twenty years. In 1891, it broke out in Kao-chao, later in towns situated on the West

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* From the Johns Hopkins Hospital Bulletin.

† Boccaccio: The Decameron. Introduction. Defoe: The Journal of the Plague Year. Defoe: Due Preparation for the Plague. Hodge: Loimologia. Vincent: God's Terrible Voice in the City. Boghurst: Loimographia. Pepys: Diary. June 7th, 1665, to Jan. 19th, 1666.

‡ Imperial Maritime Customs, Annual Report, 1889.

River, and finally in 1894, a severe outbreak occurred lower down in Canton. Now, the infection of Hong-Kong proceeded either from Pakhoi or Canton; but inasmuch as Pakhoi is more than three times as far from Hong-Kong as Canton, and the Hong-Kong commerce with the latter port is hundreds of times greater than that with the former, it is probable that Canton was the source of contagion. Supporting this view is the following significant fact: On the second of March, 1894, a large Chinese procession was held in Hong-Kong, which was attended by over 40,000 Cantonese coolies of the lower class. At this period, tens of thousands were dying of the plague in Canton, and accordingly it is not improbable that the Island of Hong-Kong was inoculated then.

The first cases appeared in the district of Tai-ping-shan where the sanitary conditions are worse than in any other part of the city. (Properly speaking the city is called Victoria and the island Hong-Kong, but the latter name is now commonly used for the city as well.) In the native and European quarters of the city, Hong-Kong presents a strange contrast, for the European districts, from a sanitary point of view, are probably unexcelled in any city in the Orient; but the native quarter, notwithstanding some fairly broad, clean streets and new buildings, is really a whitened sepulchre. Here, in the tenements and side alleys, the coolies live in indescribable filth; the segregation and overcrowding being so great that at night the overflow sleeps in the streets. Many of these in the native districts are so narrow that one walking with outstretched arms can almost touch the buildings on opposite sides of the roads. The houses are three or four stories high and originally contained fairly large-sized rooms. The Chinaman, however, with his naturally frugal mind, subdivides them by cheap wooden partitions, and makes four rooms for one. With the decrease in the size of rooms goes an increase in the number of their occupants, so that in one poorly ventilated tenement from 30 to 40 natives are huddled together, with less than 150 cubic feet of air-space per capita. As yet the coolie has not learned even the rudiments of personal hygiene, and the Chinese enjoy the unenviable distinction of being one of the filthiest people on the face of the earth. Apropos of this trait, some one has fitly called them practical Malthusians. One day in Hong-Kong we counted 14 coolies pulling and pushing a meat-cart that could have been drawn easily by a single horse; so, in a country

**Costume of physician during time of plague.**—From Janus.

where man and the horse show in a commercial ratio of 14 to 1, little in the way of civilization or personal æsthetics can be expected. As a rule the common coolie never cleans either himself or his houses.

In speaking of these questions Lowson* says: "At the beginning of the outbreak a majority of the houses were in a filthy condition. When to a mixture of dust, old rags, ashes, broken crockery, moist surface soil, etc., is added fæcal matter, and the decomposing urine of animals and human beings, a terribly unsanitary condition of affairs prevails; and that this is no overdrawn picture of what was to be met with in Tai-ping-shan, many Europeans now know to their cost." One must recall, moreover, that Hong-Kong is Europeanized China and that the conditions prevailing there do not compare with those found in Canton, for example—a typical Chinese city like those in other parts of the celestial Empire. Indeed, in comparing it with Canton, there is something almost Utopic about the sanitary condition of the native quarters of Hong-Kong.

Once begun, the epidemic was fought by the following general sanitary measures: 1) Removal of the sick and dead. 2) Temporary segration of those exposed while the premises were being disinfected. 3) Cleansing and disinfecting of "infected premises." 4) Disinfection of clothing. 5) General cleansing and limewashing of all tenement houses. 6) House-to-house visitation. 7) Disinfection of public latrines. These measures were all carried out with a considerable degree of success—much more success than attended the similar ones established later in India. This is due partly to the fact that the Chinaman is more easily bullied by sight of power than the Hindu, and partly because the customs offended by the plague regulations are, in China, for the most part merely personal and are neither national nor religious.

During the height of the epidemic the medical staff had more to do than it could accomplish, but by the aid of a number of British soldiers, especially assigned to plague duty, managed to keep up the routine work necessitated by the sanitary plague regulations. In this work the greatest opposition came from the unwillingness of the Chinese to send patients into the hospitals and the resistance they made to house-to-house inspection. In the secretion of cases, moreover, they often went to unheard-of extremes, and the district

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* Lowson: J. The Epidemic of Bubonic Plague in 1894. Medical Report, Hong-Kong, 1895.

inspectors in their search for patients often saw sights that it seems impossible to believe. Dr. Lowson says, for example: "To overpaint the pitiable surroundings associated with plague work at the commencement of the epidemic would be impossible. I have entered a long low cellar, without any window opening, and with air entering only by a square open shaft from the level of the roof three or four stories high. Down one side of the shaft ran a broken earthenware drain-pipe, leaking freely, the contents streaming down the wall of the air-shaft to a shallow pool of filth which crossed the undrained floor of earth. Although it was broad daylight outside, a lantern was necessary to see one's way. On a miserable sodden matting, soaked with abominations, there were four forms stretched out. One was dead, the tongue black and protruding. The next had the muscular twitchings and a semi-comatose condition heralding dissolution. In searching for a bube we found a huge mass of glands extending from Poupart's ligament to the knee-joint. This patient was beyond the stage of wild delirium. Sordes covered the teeth and were visible between the blackened and parted lips. Another sufferer, a female child about ten years old, lay in the accumulated filth of apparently two or three days, unable to speak owing to the presence of enlarged cervical glands. The fourth was wildly delirious and was constantly vomiting. The attendant—the grandmother of the child—had a temperature of 103° F. and could only crawl from one end of the cellar to the other. She was wet through and was herself doomed. This is no fancy sketch but a true picture of how we found some of the patients at the outbreak of the scourge in Hong-Kong. No one unfamiliar with the horrors of coolie accommodations in China, could credit how the poor live in Hong-Kong, or could imagine how the horrors of their everyday life were intensified by the plague." In disinfecting some infected premises one day Dr. Lowson told us that in one room the inspectors were forced to dig through two feet of dirt and human excreta to reach the floor.

The mortality from plague in Hong-Kong among the Chinese varies between 91 and 93 p. c., so that almost all of those afflicted, no matter what their treatment, die. Naturally in view of these facts it is not astonishing that the coolies rebel against sending their sick into the hospitals, for there the tremendous mortality is emphasized much more than in cases that remained at home. Both in the Tung-Wah Hospital and Kennedytown Hospital for infectious

diseases, wards are set aside where those who elect may receive native treatment. Of course, this practically amounts to a recognition of the quackery of the Chinese doctors on the part of the government, which thus officially assumes the responsibility for their treatment. This practice is now being strenuously opposed by the colonial medical men.

During our visit to Hong-Kong the plague was quiescent and there were only from 16 to 20 deaths a day from the disease. The house-to-house visitation at this time had been given up, so that the majority of these cases were found dead on the streets and were carried by the inspectors to the mortuary. On entering the morgue each morning the sight was a ghastly one, for the bodies were lying about on the tables waiting until the hasty autopsies, necessary for burial, could be performed. Many that had not been discovered promptly were fly-blown, while other cadavera that had for several days been lying undiscovered in obscure places were half-eaten by maggots before they were carried to the mortuary. The disposal of cases that die after successfully eluding the vigilance of the district inspectors is facilitated by the habit which the coolies have of sleeping on the streets during warm nights. In Hong-Kong, during the hot season, night shows many weird and picturesque sights. The little narrow streets in the native quarters, lighted dimly by the flickering street-lamps are simply covered by the sleeping coolies who are drawn from the crowded and poorly ventilated houses by the stifling heat. They are so crowded that one cannot walk for any distance without stumbling over the half-naked sleepers who lie stretched out on little pieces of matting. So when a secret plague patient dies, he is carried out by relatives and laid in the street among the sleeping forms. Most of these rise at dawn to go to work, and those that do not are usually later taken to the mortuary by the plague inspectors.

The mortuary is situated half way up the hill on the outskirts of the city toward Canton, and consists of a modern deadhouse, an office for the government medical officer, and quarters for the native care-taker. The first striking thing about the plague bodies was the presence on many of two parallel rows of deep purple spots about the size of a Spanish dollar extending from the sides of the neck down on to the chest. At first these appeared to be a new manifestation of the disease until Dr. Lowson told us that these purpuric spots were the results of the Chinese method of counter-irritation.

This consists in firmly pinching the skin between the thumb and forefinger until it is bruised. As there is, in plague, a general tendency to hemorrhage extravasation into the skin and serous membranes, the blood oozing from the torn vessels into these traumatic areas soon turns black, and gives the appearance which we first noted. Mosquito and flea bites behave in much the same manner. Likewise the slightest scratch or bruising of the skin is apparently always followed by a pink blush, and later by a subcutaneous hemorrhage which soon changes to a dark purple-colored spot. In many cases we observed extensive bullæ filled with blood-stained serum and in one or two instances the idiopathic hyperdermic hemorrhages which gave the disease its mediæval name of the Black Death.

The main plague hospital in Hong-Kong is now at the old Kennedytown barracks, in the extreme outskirts of the city, which have been converted into a hospital for infectious diseases. Here principally plague and smallpox cases are received. The hospital occupies a commanding position at the foot of Mount Austin, from the base of which the grounds extend to the water's edge. The main building, a substantial stone structure overlooking the mouth of the West River towards Kowloon, is covered by stucco, and contains the laboratory, offices and a few wards. The major part of the hospital, however, consists of rude matsheds made of palm-thatched walls and roof stretched over bamboo frames. They have rough board floors and are lined by coarse matting. On the whole they make a fairly hygienic hospital, except that thorough disinfection of the wards is impossible. A few supported on piles over the water's edge are perhaps more sanitary than the rest, because they get air and sunlight in greater abundance. As a rule these wards are large enough for four or five patients, their small size being a decided advantage, as convalescents and those in the early stages of the disease are thus kept from witnessing the depressing scenes that often occur when patients are in the delirious stage of the malady. Plague patients do not have beds or cots but lie on a platform made of boards, supported by ordinary carpenter's horses, over which is spread a small oblong piece of matting. They have no bedding, and their heads rest on the peculiar Chinese pillows which look more like bamboo rat-traps than anything else. When patients get in the maniacal delirium that often accompanies the acute stage of the disease, they are tied down on their rough litters by cloth thongs.

In the male wards there are coolie attendents while the women are nursed by amahs. Besides the Kennedytown Hospital there were during the days when the epidemic was at its height several other temporary hospitals established in the city, and a floating hulk, the Hygeia, nicely fitted up and anchored off the Kennedytown Hospital, was used for European and Japanese patients. Aoyama, the Japanese physician who was infected from an autopsy wound, was treated on this ship.

Epidemics begin in the bubonic form, and when the epidemic is at its height and the mortality is greatest, changes to pneumonic plague, and finally in the defervescent stage dies off again in the bubonic type. This has occurred regularly in Hong-Kong, and has been noted in the many epidemics that have occurred in India by the plague authorities there. Atmospheric conditions do not seem to have much influence on the disease, except that during the rains, people are driven into the crowded, dirty houses, where they are more exposed to infection; and the bacillii, moreover, are protected under these circumstances from the dessicating and bactericidal action of the sun's rays. This, Kitasato has shown, is one of the most potent agents in the destruction of the plague bacillus, exposure for an hour usually being quite sufficient in temperate climates to destroy the germ. Epidemics are usually heralded by a great mortality among the rats, which seem, when affected with plague, to lose all fear of human beings and run boldly about the house. In part, at least, the infection of the rats can be accounted for by the ingestion of septic material, *i. e.*, sputum and dejecta of plague patients, but by far the most prolific cause of its spread is by fleas. It is well known that fleas soon leave the body of rats dead of the plague, and it is supposed get on to other healthy uninfected rats. The agency of these insects as transporters of the disease has been shown by Simond* and by Lowson who put fleas from plague rats on healthy rodents, and found that they died of the disease in about three days. Flies and mosquitoes, however, do not seem to play such an important rôle in the transmission of plague to human beings, for both infest the wooded area about the Kennedytown Hospital, and yet no one of the attendants there was ever infected. By far the most important atria of infection for human beings are through abrasione of the skin, through the mucous membranes of the respiratory tract,

* Simond: "Propagation de la peste" Annales de l'Institut Pasteur, Oct., 1899.

and to a lesser degree through the alimentary tract. Plague, like any infectious disease, thrives where sanitary conditions are poor; and in China and India finds naturally ideal conditions for its spread among the hordes of natives whose lives of misery and squalor form the dark side of the human picture in the Far East.

The symptoms and bacteriology of the pest have already been well described in the translations of the papers of Kitasato and Aoyama, which appeared in the Bulletin of The Johns Hopkins Hospital, 7, Oct. 1896, so reference will be made only to some of the more important points which were brought to our attention in India and China. It appears that the disease may exist in any of its forms alone, or two or even more may simultaneously complicate each other in the same patient. In the simple bubonic type the location of the bubo indicates that the portal of entry of the infection occurred in the area drained by that set of lymph-glands, but it is also not uncommon to find glands enlarged *en échelon*. Thus, in one of our Hong-Kong autopsies the femoral, inguinal, iliac and lumbar groups were all enlarged and hemorrhagic. From the observations made at the Arthur Roads Hospital in Bombay, based upon the study of a large number of cases, the site of the buboes occurred as follows: Femoral, 32.12 percent; femoro-inguinal, 23.36 p. c.; axillary, 16.35 p. c.; inguinal, 12.38 p. c.; cervical, 5.25 p. c.; multiple, 94.13 p. c.; total, 94.13 p. c.

The frequency with which the buboes occur in the lower sets of lymph-glands is explained by the fact that both in India and China, natives of the lower classes go barefoot. But in this connection it is worthy of note that all of the men in the Shropshire segment in Hong-Kong who were attacked with the plague while on inspection duty had femoral or inguinal buboes, even though they were well-booted. Their trousers, however, were open at the bottom, admitting dust particles laden with plague bacilli. While on similar duty in India, the soldiers always wore puttees, and not a single case was reported among them.

In most cases the buboes are exquisitely tender and generally require local applications to relieve the pain. For this purpose the ice-bag has been used with good effect in India. Between the portal of entry and the enlarged glands, there is often a well-marked lymphangitis and at different points multiple lymphatic abscesses may occur. This was particularly marked in Aoyama's case. When we

met him in Japan, he showed us the scars of the numerous incisions made to relieve the condition about which was a slight tendency to the formation of keloid. This has been repeatedly observed in Hong-Kong among the Chinese who have recovered after a complication of suppurating buboes or lymphatic abscesses. Most of the buboes do not suppurate, but the fact that the great majority of cases die within two or three days after the onset undoubtedly bears a relation on this point. Likewise, it seems that mixed infections have a very important influence on the question of suppuration as the following figures show. In the pus of 29 suppurating buboes examined by the several continental commissions working in Bombay, the following results were obtained: Bacillus pestis, 8; staphylococci, 9; streptococci, 5; steri e, 7; total, 29.

A suppurating plague bubo forms a most indolent ulcer and the granulations at the base sprout with such reluctance that it may take months for them to heal. Fortunately in these old chronic ulcerations the pus is usually sterile. In one case in Hong-Kong, followed by recovery, the femoral vessels lay exposed in the base of a large slough about a suppurating bubo.

(To be continued.)

# A National Library and Museum of the History of Chemistry and Cognate Arts and Sciences.*

By *Fred. Hoffmann.*

It is a matter for rejoicing that not only the principal American universities and various institutes, but also a number of professional colleges, among them those of medicine and pharmacy, have accumulated and are in the possession of more or less comprehensive libraries and museums and that they are aiming at their constant enlargement and completion. Such libraries and museums cannot fail to become more and more potent auxiliaries in the educational and literary objects of these institutions as well as an efficient factor for the advancement of American scholarship and culture.

Most of these libraries are of comparatively recent origin and generally embrace the pertinent scientific and professional literature of modern times

* From Science. Dr. Hoffmann sent a paper on this subject to the Richmond meeting of the American Pharmaceutical Association.

but rarely contain any considerable amount of works of past centuries. Such older books are scarcely any longer in the book market and are rarely available except by chance as is particularly the case with works that specially relate to the remoter eras of the history of alchemy, of pharmacy, materia medica, spices, etc. Whoever has had experience in the fascinating study in these domains of historical research will be familiar with the difficulty of finding in any one of the great European libraries an approximately complete collection of the extant literature of all ages. There is quite a difference in this respect among the foremost libraries; they are mostly well provided with the general literature of the past, but are more or less deficient in this special domain of historical records. But in the multiplicity of the great book collections, particularly in Germany, libraries specially rich in ancient works relating to the history of materia medica, alchemy and pharmacy are sometimes located in close proximity and even in one city, like the comprehensive historical libraries of the German National Museum and that of the municipality at Nuremburg, the University and the city libraries at Leipsic and the various great libraries in Berlin, London and Paris. Shortcomings of this kind in the various European libraries are of less consequence to the student as the distances in Central Europe are not considerable and as books are distributed on loan by mail by most libraries.

It is, however, different in a younger civilization, and in a country of so vast an extent as the United States, where the prevailing multiplication of libraries, on the one hand, and the increasing scarcity of available books of remoter ages, on the other hand, tend constantly to increase these difficulties. The stock of ancient works in these domains of history is rapidly absorbed by the older standing libraries, and is becoming scarcer and less available from century to century. As these works are of paramount value, and indispensable in historical research and study, it should be the common aim of American scientists interested in the history of applied chemistry, of medicine, pharmacy, and materia medica, to conscientiously gather, preserve and, as much as possible, to unite whatever much or little of such ancient books has been accumulated in American book collections, with a view of ultimately consolidating the scattered parcels of these literary treasures into one American historical library of chemistry and cognate sciences and arts, instead of leaving them dispersed and screened in a multitude of petty private book collections.

Such a desideratum might be realized by the initiative and joint action of the American Chemical Society, of the American Association for the Advancement of Science, and of the American Pharmaceutical Association, and should be undertaken in time. An excellent and rare chance, perhaps never to become available again, is fortunately close at hand. The various university, and other public, libraries may possess some stray volumes of

such historical literature. and in the common interest may consent to transfer them to a central historical library of chemical and cognate literature. But the main stock for the foundation of such a library might be obtained, sooner or later, by the acquisition of the consolidation of two collateral historical libraries of superior extent and value, accumulated by individual efforts and means, during many years of unostentatious, patient, and discriminating collecting. They are the comprehensive libraries of Professor H. Carrington Bolton, in Washington, D. C., and of Professor John Uri Lloyd, and Mr. Curtis G. Lloyd, in Cincinnati, O.; the former embracing, especially, the history of alchemy and chemistry, the latter that of materia medica, pharmacy and botany.

By themselves and in the prevailing drift of indiscriminate multiplication of public and private libraries these two choice libraries would, perhaps pass to coming generations as uncommonly valuable yet separate, and fragmentary book collections in a special domain of historical bibliography and would hardly ever attain to a maximum of usefulness. When united and subsequently completed by further additions in the way of purchases, donations and bequests, they will form in the course of years a national historical library of chemistry, and materia medica unequalled in America, and on a par with other kindred achievements of American enterprise and munificence. This would add a potent factor for fostering that 'historical sense' so much appreciated in European civilization and culture and largely needed in the materialistic drift prevailing in our country and time. Nor would American students of the remoter eras of history in these domains of knowledge and application any longer be obliged to resort for historical researches to the libraries of foreign countries.

Another somewhat correlated subject is the collection and preservation of historical articles of all kinds relating to the history of chemistry, pharmacy and materia medica, as well as to objects of remembrance of men eminent in these domains of application. Whoever is familiar with the valuable and interesting historical collections of this kind in the ethnographical and art museums of the European capitals, of the National Museum at Nueremberg, and a number of Continental public and private collections will appreciate their usefulness and significance. How many interesting subjects of remembrance of eminent chemists and naturalists of the past are still astray and concealed in family and private custody, perhaps never to be gathered in accessible collections as mementos to coming generations! At the occasion of the annual meeting of the Swiss Pharmaceutical Society at Bern in August, 1898, there was in addition to the customary display of apparatus and implements an exhibit of the miscellaneous objects left by the late Dr. Fred. Flückiger, till 1891 professor of pharmaceutical chemistry and pharmacognosy at the University of Strassburg and one of the foremost scholars and writers in these special domains. It

comprised laboratory apparatus, manuscripts, rare books, diplomas, medals and various other objects of historical interest and demonstrated impressively the value and usefulness of collections of this kind.

Throughout the United States there is undoubtedly scattered a large number of similar objects and specimens of paramount historical interest and significance left by departed naturalists and students, partly emigrants from European and Central American States, which after the demise of their owners have passed to succeeding generations, perhaps as little understood and appreciated, obsolete relics. Most of such articles, even of more recent American investigators and scholars sooner or later sink into oblivion and frequently are lost. When gathered by purchase, donation or bequest and collected and preserved in one museum they would form a comprehensive collection, valuable and instructive for the history of chemistry and pharmacy as well as of their foremost representative men of the past.

Some such stray relics are to be found in a number of the collections of American institutes and universities, among them in the materia medica collection of the National Museum at Washington. They are the few remaining implements of Joseph Priestley from his kitchen laboratory in Northumberland, Pa., which will be remembered by the surviving American chemists who on August 1, 1874, assembled at that secluded village in the beautiful Susquehanna valley in centennial commemoration of the discovery of oxygen. Many interesting objects from the laboratories and studies, as well as an abundance of documents consisting of books, diplomas, medals, manuscripts, correspondence of American chemists and naturalists of the departing century, now scattered and concealed on the shelves of college museums and in domestic shrines, when gathered and united in a national museum, would at once and still more in time form a memorable and most valuable and interesting collection to which the older generation of still living American chemists and scientists would not fail sooner or later to contribute their share.

In this way an historical library and museum of chemistry and cognate sciences and arts could be realized in the course of time which from the start would bear the impress of a national one and which in interest and value might soon surpass the existing corresponding European libraries and museums.

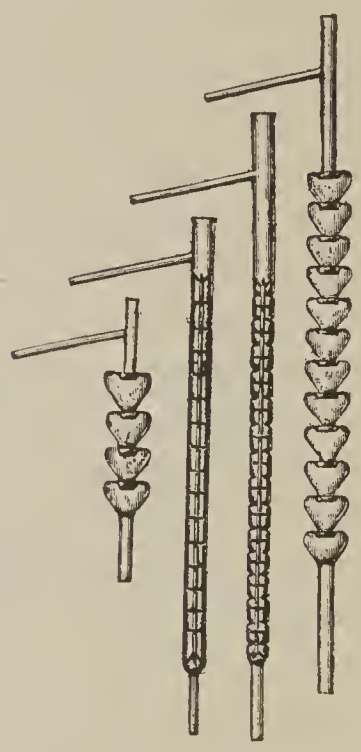
These random suggestions may be in place and in time at the dawn of a new century. They may also serve as a timely warning to all interested in this matter against dispersing the historical literary treasures and relics of the past and against the untoward multiplication of petty and inadequate historical libraries and collections as met with in the old and not less in the new world. *Fred. Hoffmann.*

Berlin, April, 1900.

# MONTHLY REVIEW.

## Pharmaceutical Technique.

**Improved Still-Heads.**—J. J. Griffin & Sons of London are now supplying a series of improved still-heads made in accordance with the designs of Professor Sydney Young, of University College, Bristol. The advantages claimed by Prof. Young for his "rod and disc" and "pear" still-heads are that they are simpler and better suited for the distillation of small quantities, and that after the distillation is stopped, the liquid returns almost completely from the still-head to the still. A further advantage of the "rod and disc" variety is that the central rod bearing the discs may, after use, be removed and washed. The "pear" still-head possesses a special advantage. In the course of a systematic fractional distillation it is necessary periodically to introduce fractions from previous operations. With nearly all other improved still-heads these (cold) fractions must either be introduced at the top of the still-head—involving some risk of breakage if the boiling point of the liquid be high—or the flask must be detached, a troublesome operation probably involving loss of material. With the "pear" still-head, however, cold liquid may be introduced without danger of fracture or loss, by means of a long funnel; a practical point of some importance. [Pharm. Jour., No. 1559, p. a.] *O. S.*



## Pharmaceutical and Phyto-Chemistry.

**A New Method of Estimating Uric Acid.**—Adolf Jolles claims that Folin's method, based upon the oxidation of uric acid with volumetric potassium permanganate, while giving correct results with pure uric acid, gives high and variable figures when applied to urine. In Folin's method the permanganate causes secondary reactions and the pink tinge produced by an apparent excess of potassium permanganate quickly fades and no sharp end reaction is obtained. The author's method is based upon the complete oxidation of uric acid with potassium permanganate in a hot, acidulated solution, the reaction being:

$$\begin{array}{l} \quad\;\; NH{-}C{-}NH \\ CO \begin{array}{l} \diagup \\ \diagdown \end{array} \begin{array}{l} \| \\ C{-}NH \\ \| \\ NH{-}CO \end{array} \begin{array}{l} \diagdown \\ \diagup \end{array} CO + 3\,O + 2H_2O = 2CO\begin{array}{l} \diagup NH_2 \\ \diagdown NH_2 \end{array} + 3CO_2 \end{array}$$

In 50—200 gm. of urine are dissolved 5—20 gm. ammonium acetate and the whole rendered faintly alkaline with ammonia. After three hours the precipitate is transferred to a filter and washed with a saturated solution of ammonium carbonate until free from chlorides. The precipitate is now washed into a beaker with hot water, some calcined magnesia added and then boiled until all ammonia has been expelled. The liquid is next acidulated with sulphuric acid, and of an approximately 0.8 p. c. potassium permanganate solution a sufficient quantity added that the pink color is permanent after boiling for 15 minutes. Now the excess of permanganate is destroyed with oxalic acid, the solution allowed to cool, made alkaline with sodium hydroxide and the urea contained therein estimated by decomposing with hypobromite solution and measuring the nitrogen evolved. A modified Knop' azometer is figured, described, and full directions given for its use.

[Ztscht. physiol. Chem., 29, p. 222.] *W. A. P.*

**The Assay of Spirit of Nitrous Ether.**—David L. Davoll, Jr., writes that while the method of the United States Pharmacopœia is usually considered sufficiently rapid, reliable and reasonably accurate, a comparison with his own method and with that of C. E. Smith* shows that such is not the case. He discusses the methods proposed from time to time and dwells upon that of Eykman, which later Curtman† attempted to use in a modified form. The methods depend upon the reaction: $2FeSO_4 + H_2SO_4 + 2C_2H_5ONO = Fe_2(SO_4)_3 + 2C_2H_5OH + 2NO$ and Eykman measures the NO evolved, while Curtman determined volumetrically either the ferric sulphate formed or else, beginning with a known amount of ferrous salt, the ferrous sulphate remaining after the reaction has occurred. Curtman was not satisfied with his own method saying that "either modification of the iron process gives fair approximations with little trouble" and preferring the U. S. P. method. The author has now so improved the ferrous sulphate method that its results are all that can be desired.

Analytical process.—3.9239 gm. ferrous ammonium sulphate is placed in an Erlenmeyer flask of about 100 cc. capacity; 20 cc. sulphuric acid (1—5) are then added together with 25 cc. distilled water. To expell air from the flask 2 gm. crystallized sodium carbonate are now quickly added while a sound, well fitting cork is loosely held in the neck, and, after effervescence ceases, is slipped into place. The cork being now partially removed, 5 cc. of spirit of ethyl nitrite or less if the spirit is much over 5 p. c. is allowed to run in, the pipette being held closely to the aqueous surface so as not to disturb the layer of carbon dioxide. The flask is then corked tightly, rotated once and set aside for an hour or better over night. The stopper is now withdrawn, allowed to rest lightly in the neck and the flask content quickly

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* Am. Jour. Pharm., 170, p. 273.
† Pharm. Rundsch., 1892, p. 156.

brought to the boiling point and boiled for six to eight minutes; the sides are washed down with distilled water, cooled quickly under the water supply, and the excess of ferrous salt titrated back with standard permanganate, preferably semi-normal.

3.9239 gm. ferrous ammonium sulphate require 20 cc. seminormal permanganate; hence 20 cc. minus cc. used in residual titration times 0.03755 gives ethyl nitrite in volume used. [Drug. Circ., 44, p. 113.] *W. A. P.*

**Rusting's Tragacanth Scheme for Alkaloidal Assay Work.**—While the use of saw dust in the assay of fluid extracts, as recommended by Thompson, appeals to the busy druggist by its simplicity, it has the drawback that the saw dust must be especially prepared for it. According to J. B. Nagelvoort, a similar scheme invented by Rusting leaves Thompson's and all others behind in expediency, cleanliness and cheapness. Nagelvoort says: "It deserves greatly to be propagated, and, since references are scarcely met in literature, it is offered here for a wider circulation."

The original method was intended for extracts containing little or no alcohol, as modified by Nagelvoort it becomes applicable to many fluid extracts containing a large percentage of alcohol.

The method.—Weigh in a porcelain dish 3 gm. of the fluid extract, add 5 cc. of water and expell alcohol. Transfer, in the usual analytical way, into a medicine bottle of 100 cc. capacity, add 60 cc. of ethyl ether (pure ether), and carefully add a solution of sodium hydroxide until just alkaline to litmus paper. Shake the contents of the bottle strongly for about a minute and add 2 gm. powdered tragacanth. Shake again for another minute, give the small globules of tragacanth mucilage time to settle, decant 40 cc. of the clear fluid, corresponding to 2 gm. of the fluid extract, into an Erlenmeyer flask of known weight, recover the ether by distillation and, in a current of air supplied by a common rubber "spray" ball, dry the alkaloids to constant weight at a temperature of about 50° C.

Fluid extract of hydrastis the author assays as follows: He dilutes 10 gm. with 20 cc. water and slowly boils the mixture in an Erlenmeyer flask of about 100 cc. capacity until a little less than 20 gm. remains, cools, adds water to make 20 gm., shakes with infusorial earth and filters. He transfers 10 gm. of the filtrate to a medicine bottle of 100 cc. capacity, adds 25 cc. pure ether, then 3 cc. ammonia water, 10 p. c., and shakes. He now adds 25 cc. petroleum ether, again shakes the mixture, adds 2 gm. powdered tragacanth and again shakes, allows to settle and decants 40 cc. of the clear liquid, corresponding to 4 gm. fluid extract. This he deprives of its ethyl ether by immersion of the flask containing the 40 cc. in water of 30—35° C. for a few minutes. When the ethyl ether has evaporated, he cools the remaining liquid, corks and puts aside for a few hours in a cool place during the winter or in a freezing mixture in summer. When the hydrastine has

crystallized out, he decants the supernatant liquid, dries and weighs the crystals. [Am. Jour. Pharm., 72, p. 271.] *W. A. P.*

**Oil of Camellia Drupifera.**—The oil extracted from the seeds of *Camellia drupifera*, known by the natives of Tonkin as Caydeau-So, is used by them as food, as well as for application to the hair and as an external remedial agent. The kernels of the seeds yield on expression 28 to 35 per cent. of a bland oil, which does not readily become rancid. Pottier has examined this oil, for which he gives the following figures: Sp. gr. at 15° C., 0.890; acidity in terms of oleic acid, 2.876 per 1,000; opt. rot. (200 mm.) +1.8; bromine absorption number (of fatty acids), 0.435; iodine absorption number (of fatty acids), 0.680. Twelve cc. of the oil give a white permanent emulsion with 8 cc. of lime water; with the same proportion of solution of ammonia separation takes place. Sulphuric acid gives a brown coloration with Heydenreich's test. It gives no reduction of silver with Becchi's test, nor does it afford any crystals of arachidate of potassium.

[Pharm. Jour., 1900, I, p. 495; from Nouv. Rem., 16, p. 121.] *E. K.*

**Action of Heat on Papain.**—V. Harley confirms the statement of Wuertz that, if papain be first thoroughly dried, its digestive power on fibrin is but little, if at all, influenced by prolonged exposure to a temperature of 100° C. It is, however, otherwise when the ferment is in solution. A series of digestions conducted at various temperatures, in which the amount of matter dissolved, the optical rotation of the resulting solutions, and the residual undigested fibrin were determined, show that the proteolytic action of papain in solution is destroyed at about 82° C. Fibrin was found to be quite unaltered when digested in a solution of papain which had been previously heated to 82°.5 C. From the color produced by tyrosinase on the products of digestion, it would appear that heat merely has the effect of lessening the digestive power of papain, but does not modify it in any other way. In all cases, even when the digestive action has been reduced to a minimum, in the solutions heated to the highest point, the typical color-reaction at first red, then green, was obtained with tyrosinase, only differing in intensity from that produced by unheated papain digestion-products.

[Pharm. Jour., 1900, I, p. 495; from Jour. de Pharm. [6], 11, p. 269.] *E. K.*

**Thujone and Thujol.**—Experiments with oil of *Artemisia absinthium* have borne out the hypothesis previously advanced by Eugène Charabot, that the changes undergone by the terpenic constituents of essential oils take place in two distinct phases, corresponding to the chief stages in the development of the plant. The first is that of the formation of the terpenic alcohols and of their transformation, by the elimination of water, into compound esters or into esters and terpenes. These changes take place in the organs

furnished with chlorophyll, and synchronize with the development of the green parts of the plant. The second stage coincides with the period of maximum respiratory energy, when the flowering is in process. The amount of oxygen absorbed is then considerable, and thereby the primary alcohols are transformed into aldehydes, and the secondary alcohols into corresponding ketones. This theory is borne out by the results obtained with two specimens of wormwood oil. The first was distilled on June 8, 1899, when the plants had only begun to develop. The second was distilled on July 12, when the growth of the plants had attained its maximum. The following were the figures obtained:

| | June Distilled Oil. | July Distilled Oil. |
|---|---|---|
| Yield (of fresh plant)... | 0.1429 percent. | 0.2450 percent. |
| Sp. gr. at 25° C. | 0.9307 " | 0.9253 " |
| Combined thujol | 7.6 " | 10.3 " |
| Free " | 9.0 " | 9.2 " |
| Total " | 16.6 " | 19.5 " |
| Esters calculated as acetate... | 9.7 " | 13.1 " |
| Thujone | 43.1 " | 35.0 " |

[Pharm. Jour., 1900, I, p. 567; from Compt. rend., 130, p. 923.] *E. K.*

**Pinenol.** — A new terpenic alcohol $C_{10}H_{16}O$ has been obtained by P. Genvresse by the action of nitrous fumes, or of nitrogen peroxide, on pinene, cooled by means of a freezing mixture of ice and salt. On distilling in steam, the unattacked pinene is first volatilized, then pinenol, with a trace of a nitrogen derivative. This last is decomposed by distillation under ordinary pressure, and then the pinenol is distilled off under reduced pressure. It is a pale yellow fluid with a characteristic, agreeable odor. It boils at 225° C. at 740 mm. pressure, and at 143° C. at 38 mm. Its sp. gr. at 0° C. is 0.9952 and its refraction index 1.497. It is insoluble in water, but dissolves in all proportions in alcohol; it is lævogyrate, the rotation being −14.66°. With phosphoric anhydride it parts with a molecule of $H_2O$, forming cymene, $C_{10}H_{14}$. When acetylized, it forms the ester $C_{10}H_{15}OCOCH_3$, which has a lavender odor, and boils at 150° C. under 44 mm. pressure. When treated with chromic anhydride and sulphuric acid, it forms the ketone, pinenone, $C_{10}H_{14}O$, having a pleasant odor, and an optical rotation of −21.12°, and a sp. gr. of 0.9953 at 0° C. With hydroxylamine hydrochloride it forms pinenonoxime $C_{10}H_{14}:NOH$ in ortho-rhombic crystals, melting at 89° C. With bromine this body gives a dibromo compound $C_{10}H_{14}Br_2NOH$, melting at 152° C., and with benzoyl chloride it yields the derivative $C_{10}H_{14}NO.CO.C_6H_5$, crystallizing in fine crystals which melt at 105° C.

[Pharm. Jour., 1900, I, p. 567; from Compt. rend., 130, p. 918.] *E. K.*

**Oxidizing Ferment in Flowering Plants.** — N. Passerini claims to have detected the presence of at least a trace of an oxydase in about 80 out of 100 species of flowering plants examined. It is more constant in the root than in any other organ. The guaiacum reaction is often stronger in the bark than in the pith. In the leaves oxydases are often entirely wanting, or are present only in very small quantities, and are then generally localized in the veins. When present in the flower, they are more abundant in the pistil than in the stamens; in the latter they occur chiefly in the filament. In the fruit, they are most abundant in the pericarp; in the seeds they disappear before maturity.
[Pharm. Jour., 1900, I, p. 521; from Nuov. Giorn. Bot. Ital., 6, p. 296.] *E.K.*

**Ferment of Seeds.** — The carob, *Ceratonia siliqua*, is taken by M. E. Bourquelot and M. H. Hérissey as the type of seeds with a horny endosperm, composed, for the greater part, of mannane and galactane. During germination the embryo secretes a soluble ferment, which hydrolizes the carbohydrates of the endosperm, producing mannose and galactose. Similar results were obtained with the fœnugreek (*Trigonella fœnum-græcum*) and the lucerne (*Medicago sativa*). The action of the soluble ferments is comparable to that of dilute sulphuric acid. For the ferment obtained from these two plants the authors propose the name *seminase.* The reserve carbohydrates are manno-galactanes, capable of being hydrolysed by the seminase. [Pharm. Jour., 1900, I, p. 521; from Compt. rend.] *E. K.*

**Oil of Chrysanthemum.** — The green leaves of *Chrysanthemum japonicum* yield on distillation, according to G. Perrier, about 0.16 percent of a greenish volatile oil, which is most abundant at the commencement of flowering. It is a somewhat oily liquid with a peculiar odor, resembling that of mint and of chamomile. It begins to boil at 160° C. Its sp. gr. is 0.932 at 15° C., and its refractive index 1.4931 at 18° C. It is soluble in 10 parts of alcohol (70 percent). When cooled to —15° C. it deposits a small amount of a solid amorphous body, probably a paraffin; at —24° C. it becomes very thick, and is completely solidified on immersion in a mixture of ether and solid carbonic anhydride. It is acid to litmus, combines partially with bisulphite, and has a saponification number of 8.61. When the alkaline salt resulting from the saponification is decomposed with hydrochloric acid, there is formed a solid acid resembling angelic acid in odor.
[Pharm. Jour., 1900, I, p. 437; from Bull. Soc. Chim., 23, p. 216.] *E. K.*

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## Botany and Pharmacognosy.

**Akakia.** — David Hooper brings the knowledge of the ancient Eastern medicine Akakia up to date. This substance has been used in the East, especially among the Mohammedan community, as a panacea. The drug is

an astringent extract of an *Acacia*, and is imported into India via Bombay from the Red Sea ports and the Persian Gulf. As sold by the native apothecary the drug is unsatisfactory owing to its variability. [Pharm. Jour., 1900, I, p. 591; from Jour. Asiatic Society, Bengal, 68, p. 245.] *R. H. D.*

**Cultivation of Ginger.**—Gaston Landes points out that the cultivation of ginger in Jamaica, where it has proved remunerative to the 25,000 cultivators who prepare it for shipment, has led to its cultivation in St. Lucia, Dominica, and Barbadoes. He describes the cultivation of *Zingiber zerumbet* Rosc. in Martinique. The best quality consists of plump pieces, of a uniform light color, free from moisture. Lower grades are black, or otherwise colored, wrinkled, damp, and less aromatic. If the ginger be gathered before it reaches maturity, it will wrinkle during drying, and be less aromatic and pungent than if it had been gathered at maturity. The drying process must be perfectly carried out, otherwise the rhizome will become mouldy. It is packed in barrels for shipment. [Pharm. Jour., 1900, I, p. 567; from Rev. des Cultures Coloniales, 5, p. 329.] *R. H. D.*

**Notes on Chaulmoogra.**—It appears that the seeds of chaulmoogra met with in commerce, and generally considered to be the product of *C. odorata*, differ materially from those of that species. D. Hanbury (Science Papers, 244) describes and figures Chinese chaulmoogra seeds, as imported from Siam into China, as having foliacious, lanceolate cotyledons, which he recognizes as not being identical with *Chaulmoogra odorata* of Roxburgh, that authority describing the cotyledons of *C. odorata* as being subreniform, with the radicle variable. Nothwithstanding this, in works on materia medica and in museums, the chaulmoogra seeds of Hanbury are attributed to *C. odorata*. Desprez has recently received from Calcutta specimens of both seeds. He describes the true *Chaulmoogra odorata* seeds as being larger, less uniformly gray, the testa being marked with dark patches. The integuments are not so brittle as in the ordinary kind, the kernel is reddish and marked with white. The cotyledons are thick, subreniform, the radicle placed at the side. These seeds contain a large amount of hydrocyanic acid. The seeds generally met with in commerce are uniformly gray in color, the integuments are brittle, the kernel is dark in color with a rough surface, the cotyledons are foliaceous-lanceolate, and the radicle direct, as described by Hanbury. These seeds contain no prussic acid. [Pharm. Jour., 1900, I, p. 495; from Jour. de Pharm. [6], 11, p. 315.] *R. H. D.*

**Fungi in Juniper Berries.**—A. Nestler finds the mycele of a fungus almost universally present in the so-called "berries" of the juniper immediately before maturation. The change in color from green to black or blue-black appears to be due to this fungus. It was not found in the fruit during the first year of its development. [Pharm. Jour., 1900, I, p. 495; from Ber. d. bot. Gesell., 17, p. 320.] *R. H. D.*

**Production of Alcohol by Plants.**—M. P. Mazé gives further evidence in favor of his precious observations on the production of alcohol by plants, especially in the germination of oily seeds. He concludes that these seeds are capable of transforming substances of the group $CH_2$ into substances of the group CHOH by the fixation of oxygen. The castor-oil plant exhibits this phenomenon to a remarkable degree. [Pharm. Jour., 1900, I, p. 495; from Compt. rend., 130, p. 424.] *R. H. D.*

**Some Vegetable Drugs.—Folia Mayteni Vitis Idaei.** From *Maytenus Vitis Idaei.* A Celastracea growing in Argentine. Popular name: *Palta, Colquiyuyu, Capia Gangona, Chaplan, Sombra de toro carapé.*

This Argentinian drug has been obtained through Mr. Theodor Stuckert of Cordoba (Argentine), who states that at home it is successfully employed for the treatment of tinnitus aurium, cataract and inflammations of the gums. Further details on the therapeutic properties of the maytenus leaves and their mode of application are not yet available.

**Folia Combreti Raimbaulti** (Kinkélibah). As stated in Merck's Report for 1895, p. 121, this drug, derived from *Combretum altum* Quill. et Porr., is regarded as a specific for the dreaded tropical black-water fever. From more recent communications by H. Jumelle* this view appears to be well founded since the observations of Rançon,** of the French army medical service, confirm the active properties of Kinkélibah as a remedy for black-water fever, his experience having been collected during the campaign in Madagascar and his sojourn in French Indo-China.

**Herba et Radix Brachicladi Stuckerti.** From *Brachycladus Stuckerti*, a new specimen of the Compositae, growing in Argentine.

The scientific press contained until recently but little information on the properties of this interesting drug. Mr. Stuckert, whose name the plant bears, states that the aqueous infusion of the whole drug is employed with extraordinary success by the natives of Argentine for the mountain affection called locally *mal de puna* or *soŕacho* and caused by the sojourn in elevated regions. Experiments made with asthmatic patients have shown that continued use of the infusion of the plant adduces in time a considerable alleviation of the attacks of asthma. Cut and smoked as a cigarette the plant brings immediate relief to sufferers from asthma. Brachycladus cigarettes smell pleasantly of cumarine and may be treated with traces of saltpetre so as to keep them better alight. Used in this form the action of this drug is less powerful than that of *Cannabis Indica*, on the other hand it is devoid of the unpleasant concomitant properties of the latter, such as scratching in the throat etc. Continued use of brachycladus cigarettes induces sleep

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* Revue générale des sciences pur. et appl. 1899, No. 15, p. 585.
** See Jumelle's paper.

followed by a slight heaviness in the head whilst the asthmatic attacks remain sometimes absent for days.

With regard to the botanic description of this new species consult Ch. Speggazzini's Communicaciones del Museo Nacional de Buenos Aires, vol. 1, pp. 133. [Merck's Annual Report, 1899.] *R. H. D.*

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## New Remedies.

**Hedonal** is methyl-propyl-carbinol-carbamic acid ester and is recommended as a hypnotic by the Elberfelder Farbenwerke, especially in temporary or light forms of insomnia. [Pharm. Zeitg., 45, p. 282.] *W. O. R.*

**Idonaftan** is an iodine derivative of naphtha, containing 3 p. c. of combined iodine. It is dispensed in ointment form, which is readily and completely absorbed, po sessing anodyne properties and is dark green by transparent light, permanent in air, and possesses an agreeable odor.

[Zeitschr. d. a. o. Ap. Ver.] *W. O. R.*

**Kineurin** is a trade name for quinine glycerophosphate.

[Pharm. Zeitg., 45, p. 282.] *W. O. R.*

**Chlorosonin** is a combination of chloral hydrate and hydroxylamine, possessing the hypnotic properties of the first ingredient. Upon the addition of water the compound separates into its components.

[Zeitschr. d. a. o. Ap. Ver., 54, p. 323.] *W. O. R.*

**Gasterin** is a preparation obtained from the stomach of a dog, in a manner similar to that by which pepsin is obtained. It is recommended to be used in acid solutions the same as pepsin.

[Münch. med. Wchschr.; through Zeitschr. d. a. o. Ap. Ver., 54, p. 324.] *W. O. R.*

**Aniodol** is a solution of trimethanal and is recommended to be used as an antiseptic in nose and throat troubles in a 0.5 p. c. solution.

[Pharm. Runds., 26, p. 244.] *W. O. R.*

**Sidonal** is the trade name of the quinic acid salt of piperazine prepared by Jaffe and Darmstaedter, and is used to detect hippuric acid in urine, by eliminating the uric acid, in doses of 5—8 gm. daily.

[Ph. Centrlhl., 41, p. 180.] *W. O. R.*

**Urosin** is a combination of quinic acid and lithium citrate and is employed as a diuretic. [Pharm. Post, 33. p. 206.] *W. O. R.*

**Cayaponin** is the active principle of *Cayapona globulosa* and possesses purgative properties, when administered in doses of even a few mg.

[Zeitschr. d. a. o. Ap. Ver., 54, p. 323.] *W. O. R.*

**Cephalin** is a mixture of antipyrine, 5 p., roasted coffee, 5 p., caffeine, 2 p., and sodium salicylate, 2 p. Dose 0.24 gm.

[Zeitschr. d. a. o. Ap. Ver., 54, p. 323.] *W. O. R.*

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## Organo-Therapeutic Preparations.

**Glandula Parotis sicc.** Prepared from the parotid gland of lambs.

The internal administration of the parotid gland has already been recommended two years ago by Bell[1] for the treatment of carcinoma of the uterus and certain diseases of the ovaries. From recent investigations of Mallett[2] the parotid extract appears to check dysmenorrhoic pains much more certainly than any of the uterine sedatives, from whatever cause the trouble may arise. Similarly, it dispels all pains arising from the ovaries. It acts favorably upon irregular menstruation and it also seems that under the influence of the parotid medication pelvic exudates soften more easily and are more rapidly absorbed with the help of massage than is the case under other circumstances. The treatment reacts also beneficially upon the general condition of the patient, especially upon continued headaches. The favorable experience of Mallet is confirmed by Shober[3] as far as ovaritis, ovarian dysmenorrhœa and neuralgia are concerned. The preparation is best given in the form of tablets containing each 0.12 grm. of the dried powdered glandular substance, 3—6 of which should be given in the course of the day. The treatment should be carried over a period of two months and should not be discontinued earlier. The treatment is contra-indicated in artificial climateric produced by bilateral salpingo-oöphorectomy.

**Glandula thyreoidea siccata pulv.** Our knowledge of the active components of this organ has recently been extended by the investigations of Ad. Oswald[4], which show that the body described by anatomists as the thyroid colloid consists of two albuminoids, viz.: thyroglobuline and a nucleoproteide. Thyroglobuline, the active component of the thyroid gland, is the exclusive vehicle of the iodine and hence the colloid containing it must be regarded as the only active secretion of the thyroid gland. In addition to iodine the thyroid gland has been shown by Baldi[5] to contain bromine which is presumably combined in a similar manner as the iodine.

Among the new indications for the practical application of the thyroid gland we may mention: Neurasthenia and polyarthritis deformans (Claisse[6]), diabetes mellitus (W. Murrell[7]), Addison's disease (de Cérenville[8]), arterio-

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1 Therapeutische Wochenschrift, 1896, No. 28, p. 659.
2 Deutsche Medicinalzeitung, 1899, No. 82, p. 933.
3 Semaine médicale, 1899, No. 27, p. 216.
4 Zeitschr. für physiologische Chemie, 1899, No. 27, p. 14
5 Rendiconto del Real. Ist. Lombard., 1898.
6 Semaine médicale. 1899, No. 4, p. 31.
7 Medical Press and Circular, 1898, December 14
8 Revue médicale de la Suisse romande. 1899, p. 513.

sclerosis (P. Geraci[9]), and arthritis (Taruella[10]). Herman[11] healed a case of recurring mammary carcinoma by oöphorectomy and concurrent administration of thyroid. The extirpation of the ovaries alone yielded a marked improvement in only 4 out of 15 cases of carcinoma, whereas the results were much more favorable when the operation went hand in hand with the introduction of the thyroid. Mabille's[12] observation that the thyroid and arsenious preparations possess antagonistic properties has repeatedly been tested and found to be based upon fact. Ewald[13] recommends accordingly arsenic as an efficient correcting agent for thyroid poisoning. This writer prescribed in gradually rising doses 2—6—8 mgr. per day of arsenious acid and administered at the same time thyroidine in the form of tablets (8—10 daily of 0.25 grm. each), by which means he was able to eliminate the unpleasant secondary symptoms of the thyroid medication.

**Glandula Thymi sicc. pulv.** An excellent comprehensive paper has been published by L. M. Bonnet[14] in which the present position of our knowledge of the function of this gland from a physiological and pathological aspect is set forth. Beard[15] shows the thymus gland to be that element in the embryonic system where leucocytes are first formed, i. e. from epithelia, as has now been proved. From the thymus gland the leucocytes wander into the blood and the other organs and at certain centres form the foundations for the general lymphatic apparatus of the body. In a measure as the latter develop the function of the thymus gland recedes until ultimately the organ undergoes complete atrophy. Ch. Macalister[16] already secured in 1893 unquestionable successes by the internal administration of thymus in a case of pseudohypertrophic myopathia. Encouraged by these results, Pitres[17] has employed the gland successfully in a similar case and suggests the desirability of essaying the treatment of this disease by means of thymus, all other modes of treatment having so far, as is well known, proved unavailing. Stöltzner and Lissauer[18] were unable to confirm the favorable results recorded by Mettenheimer[19] in the treatment of rachitis.

**Hepar.** The internal use of ox-liver as an efficient remedy for hemeralopia was already known in the days of Hippocrates. Trantas[20] having used this ancient remedy in 10 cases of the same trouble has been able to record a strikingly rapid improvement. Within 10 to 18 days he witnessed also the disappearance of the xerosis of the cornea and conjunctiva. Liver was ad-

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[9] Monitore Sanitario, 1899, No. 6.
[10] Rev. thérapeutique Méd.-chirurg., 1899, No. 14, p. 481.
[11] Klin.-therapeutische Wochenschr., 1899, No. 30, p. 979.
[12] Merck's Report, 1896, p. 109. and 1898, p. 114.
[13] Therapie der Gegenwart, 1899, No. 9.
[14] Gazette des Hopitaux, 1899, No. 140, p. 1321 and No. 143, p. 1353.
[15] The Lancet, 1899, No. 3.
[16] British Medical Journal, 1893, No. 1684, p. 729.
[17] Gazette hebdomadaire de Méd., 1899, Jan. 8.
[18] Jahrouch f. Kinderheilkunde 1899, Vol. 50, No. 4.
[19] Ibid. 1897, Vol. 46, Nos. 1 and 2.
[20] Semaine médicale, 1899, No. 34, p. 272.

ministered either boiled or fried in daily doses of 200 gm. Trantas believes this favorable result of the liver treatment to be due to regeneration of the visual purple. Spillmann and Demange[21] effected in various diseases of the liver by the administration of ox-liver both an increase of the quantity of urine excreted and of the proportion of urea and phosphoric acid, and suppression of the urinary albumen previously present in the urine. The results exceeded all expectation in the treatment of cirrhosis atrophica; the improvement was likewise visible in tuberculosis and congestive conditions of the liver. No result was obtainable in bilious hypertrophic cirrhosis of the liver, success was also absent when the lesions of the organ were too far advanced.

**Ovaria siccata pulverisata** (Ovarial). Apart from its application in chlorosis, the use of ovarian substance was confined to troubles arising from climacteric. P. F. Richter[22] has recently shown by experiments with castrated female dogs that the diminished metabolic process due to ovariotomy is enormously increased by the introduction of ovarial tablets, so as to justify the assumption that it may be possible to successfully treat obesity having its origin in a diminished consumption of oxygen by means of the ovarian substance. Delaunay[23] and René Moreau[24] recommend the ovarian substance in Basedow's disease and the latter advocates this mode of treatment in all cases in particular where a patient suffering from Basedow's disease is affected with lesions of the ovaries and uterus or with irregularities in the genital sphere. The preparation has proved most effective in the hands of Wilcox[25] in the case of young female patients in melancholic and maniacal conditions and suffering at the same time from complete amenorrhœa. Toulouse and Marchand[26] have treated by means of the ovarian substance a number of epileptic women where the appearance of the epileptic crises seemed to be connected with the menstrual functions, and succeeded thereby in diminishing the frequency of the attacks and the attending sensation of giddiness.

**Testes siccati pulverisati.** The application of this organic preparation, which has repeatedly been employed as a tonic, is now also recommended by Burghart[27] in diabetes, especially in the case of obese women. It is, according to Burghart, an open question whether the action of this gland, which manifests itself despite a mixed diet in a continuous decrease of the excretion of sugar, can be regarded as specific, but it is certain that in the majority of the cases treated the improvement was so striking as to invite further tests. [Merck's Annual Report, 1899, p. 118.] *E. K.*

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21 Presse médicale, 1899, No. 64, p. 82.
22 Deutsche medicinische Wochenschrift, 1899, No. 46, Ver.-Beil. No. 44, p. 269.
23 Presse médicale, 1899, No. 6.
24 Thèse de Paris, 1899.
25 Deutsche Medicinal-Zeitung, 1899, No. 68, p. 770.
26 Presse médicale, 1899, No. 15, p. 72.
27 Deutsche medicinische Wochenschrift, 1899, Nos. 37 and 38, p. 629.

# Literary.

## Books and Pamphlets Received.

Verlag von Gebrüder Borntträger—Leipzig. Die Harze und die Harzbehälter. Historisch-kritische und experimentelle in Gemeinschaft mit zahlreichen Mitarbeitern ausgeführte Untersuchungen von H. Tschirch. Ein Bd., pp. VIII., 417, mit sechs Tafeln. 1900. M. 18.

—— Die Glykoside. Chemische Monographie der Pflanzenglykoside nebst systematischer Darstellung der künstlichen Glykoside von Dr. J. J. S. van Rijn, Direktor der Landwirthschaftlichen Versuchstation in Mastricht. Ein Bd., pp. XVI, 511. 1900. M. 10.

Verlag von R. Gaertner—Berlin. Chemisch-technisches Repertorium. Uebersichtlicher Bericht über die neuesten Erfindungen, Fortschritte und Verbesserungen auf dem Gebiete der technischen und industriellen Chemie. Von Emil Jacobsen, 36. Jahrgang. Zweites Halbjahr. Zweite Hälfte. Mit in den Text gedruckten Illustrationen. 1900. pp. 218.

Verlag von Ernst Guenther—Leipzig. Humoristisch-pharmazeutisches Jahrbuch nebst Glückskalender für das Zwanzigste Jahrhundert. Herausgegeben von einer Anzahl hoffnungsfroher Collegen. pp. 64. 1900.

D. Van Nostrand Co.—New York. The chemistry of essential oils and artificial perfumes. By E. J. Parry. Illustrated with engravings. pp. VIII, 411. 1899.

F. B. Power, Director Wellcome Research Laborataries—London. 1. By H. A. D. Jewett. Pilocarpine and the alkaloids of jaborandi leaves, pamphlet, pp. 25; 2. A new glucose from willow bark, pamphlet, pp. 6; 3. Some new gold salts of hyoscine, hyosocyamine and atropine, pamphlet, pp. 4. Abstracts from Transactions of the Chemical Society. 1900.

Authors—Leipzig. Ueber Isofenchylalkohol von J. Bertram und J. Helle. Separat-Abdruck aus dem Journal für Praktische Chemie. Neue Folge, Vol. 61. Pamphlet, pp. 14. 1900.

Author—Ithaca, N. Y. Physical reactions and the mass law by A. T. Lincoln. Pamphlet, pp. 27. Reprinted from the Journal of Physical Chemistry, Vol. 4, p. 141. 1900.

Agr. Experiment Station—Madison.* Bulletin No. 81, pp. 10. 1. Analysis of licensed commercial fertilizers. 2. Experiments in grinding with small steel feed mills by F. H. King and J. A. Jeffery. Bulletin No. 82, pp. 37. 3. Silage and the construction of silos by F. H. King. Bulletin No. 83, pp. 68.

## Reviews.

Monographien zur deutschen Kulturgeschichte. Band 3. — Der Arzt und die Heilkunst in der deutschen Vergangenheit. Von Hermann Peters. Ein Band. Quarto. 136 S. mit 153 Abbildungen und Reproductionen von Originalen aus dem 15. bis 18. Jahrhundert. Verlag von Eugen Diederichs in Leipzig. 1900.

Wohl hat die „Schulweisheit" wesentlich die Lichtseiten der Geschichte des „classischen" Alterthums und des Mittelalters, den Werdegang der Kulturentwicklung und der nationalen Gestaltung der Völker zum Gegenstande des geschichtlichen Unterrichts gemacht und es dem Studium beruflicher Specialforschung überlassen, aus der verbliebenen Literatur die dunkle Kehrseite der ethischen Weltanschauung zu enthüllen. Die Ergebnisse dieses Theiles historischer Forschung auf den Gebieten des Sanitätswesens und der Heilkunst eröffnen aber ein noch weit schrecklicheres Panorama, wie es in der Kulturgeschichte die Zeit der mittelalterlichen Inquisition, der Hexenverbrennungen und anderer Verirrungen menschlichen Aberglaubens und Fanatismus in grauenvoller Weise und Unmasse darbieten. Die Geschichte der vermeintlichen „Heilkunst", des Sanitätswesens der Städte, der menschlichen Wohnungen und der Lebensweise in denselben gewähren ein wahrhaft grauenvolles Bild einer unheilvollen Kulturverirrung und Unwissenheit, denen wohl nicht weniger Menschen zum Opfer fielen, als den vermeintlichen Gottesgeisseln, der Pestilenz und den Seuchen, welche Länder und Städte decimirten. Das vorliegende Buch ist nicht in der Absicht geschrieben, diese furchtbare Kehrseite des Werdeganges und der Irrungen der Kultur und der Heilkunst zur Anschauung zu bringen, wenn es auch auf fast jeder Seite Belege und Beiträge zur Vervollständigung der modernen Forschung über die wahrhaft entsetzlichen Zustände der leidenden

* The bulletins of this station are sent free to all residents of Wisconsin upon request.

Menschheit des Mittelalters bringt. Dasselbe wird daher in gebildeten, mit der Kultur- und Sittengeschichte einigermassen vertrauten Leserkreisen volles Interesse finden. Es ergänzt textlich und bildlich die grösseren und kleineren Geschichtswerke der Medizin sowie der Kultur- und Sittengeschichte und berührt alle Zweige des mittelalterlichen Sanitäts- und Heilwesens, in denen ja auch die Apothekerkunst einen nicht unwesentlichen Factor bildete. Das Buch hat daher auch für die Geschichte der Pharmacie nicht weniger Interesse wie für die des Sanitätswesens und der Heilkunst und ist das Werk des um die Geschichte der Pharmacie verdienten Apothekers Hermann Peters, dem die Fachliteratur mehrere historische Werke und Monographien und die treffliche Herstellung der pharmaceutischen Abtheilung des Germanischen National-Museums in Nürnberg verdankt.

Die Reihenfolge der Bearbeitung und zugleich die Reichhaltigkeit des Buches ergiebt sich aus den folgenden Seitenüberschriften desselben: Altgermanische Heilkunst. Schutzheilige, Geistliche als Aerzte. Schule von Salerno. Autorität des Hippokrates. Harnschau. Scholastik. Stellung und Taxe der Aerzte. Jüdische Aerzte. Universitäten-Anatomie. Apotheken. Wundärzte. Feldärzte. Aderlass und Schröpfen. Fahrende Aerzte. Weibliche Aerzte. Häusliche Krankenpflege. Bäder und Badstuben. Aussatz und Pestilenzen. Einfluss des Humanismus. Botanik. Ansehen und Stellung der Aerzte. Apotheken. Wundärzte. Häusliche Arzneimittel. Paracelsus. Chemie. Anatomie. Botanik. Recepte. Medicinischer Kannibalismus. Medicinischer Aberglauben. Boerhaave. Schutzpockenimpfung. Hygiene. Apotheker. Chirurgen. Zahnärzte. Augenärzte. Missgeburten. Seuchen. Tod und Bestattung.

Die Abbildungen sind durchweg Reproductionen von Originalen aus der mittelalterlichen Literatur. Auch die Herstellung und der Druck des Buches sind der älteren Weise angepasst. Der Verfasser desselben, sowie der Verleger und Herausgeber der „Monographien zur deutschen Kulturgeschichte“ verdienen alle Anerkennung für die Bereicherung der Literatur durch diese eigenartigen, in jeder Weise lehrreichen und interessanten Arbeiten. *Fr. Hoffmann.*

# SUPPLEMENT.

## Bibliography.

J. B. Bailliere et Fils announce among their numerous recent publications an Atlas colorié des plantes medicinales indigènes with 144 plates by Hariot for the moderate price of 6 fr. 50.

Catalogues Received:—

J. B. Baillière et Fils — Paris. Le Mois Medico-chirurgical. March to May 1900.

P. Blackiston's Son & Co. — Philadelphia. A catalogue of Books on chemistry, technology, water and milk analysis etc. 1900.

F. A. Brockhaus—Leipzig. Monthly list of new books. March to May 1900.

Burrows Brothers Co. — Cleveland. Catalogue of second-hand books. No. 19, 1900.

Richard Jordan—Munich. Antiquarischer Anzeiger No. 24. Botanik.

Gustav Fock — Leipzig. Lager Verzeichnis, No. 171. 1900.

Lemcke & Buechner—New York. Monthly bulletin of world-literature. February, March and April 1900. 2. Monthly bulletin of popular new books. April 1900.

The Macmillan Company—New York. Book reviews. March to June 1900.

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B. G. Teubner—Leipzig. Mittheilungen. No. 1, 1900.

D. Van Nostrand Co.—New York. Catalogue of books on chemistry, chemical technology and physics. April 1900.

U. S. Dept. of Agr.—Washington. Monthly list of publications. March to May 1900.

## Commercial.

**The Commerce of Drugs.** * — The wholesale dealer in drugs has to supply the varying demands of different countries, and must either lose business or keep in stock and sell drugs of quality often very much below the B. P. standard. But he is always willing to procure drugs of the best quality for those who will pay the price for them.

Unfortunately, the retail chemist has often only the knowledge derived from text-books and very little practical knowledge of commerce. Few, probably, could pass a successful examination if asked questions as to the different grades of drugs in wholesale price lists and their relative values for purposes of pharmacy.

Thus, a man may purchase a very nice-looking sample of gum arabic at a cheap rate and think he has got a bargain, but finds on dissolving it that it either has very little adhesive property or that it gives a glairy mucilage, or that it has a considerable proportion insoluble; or he may buy cheap myrrh and find that it yields only a small quantity of good gum fit for mist. ferri co., and that it requires careful picking to separate the pieces of different flavor (Bissabol, etc.), that would spoil the flavor of the tincture; or he may buy cheap saffron and find it loaded with sulphate of baryta or soluble salts of the alkalies, or containing *Calendula* colored with aniline dye. Or he may buy a cheap aloes and find that he has bought Natal instead of hepatic.

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* Concluded from p. 295.

or Socotrine aloes; or Barbados, which seemed cheap, but yields only an amount of watery extract proportional to its cost. The only possible way of buying cheaply is buying in large quantity when there are "drugs in the market"—i. e., when the supply exceeds the demand, but even then if a price less than the cost of production is paid he will probably have to make up that price in the long run when the drug gets scarce again. It will be found, if inquiry is carefully made, that the most successful drug businesses are those in which the greatest care is taken to secure the purest and best drugs. A medical man soon finds out whether good ipecacuanha has been used in a case of croup, and the public are not slow to discriminate between medicine conscientiously prepared and that which is not.

CATALOGUES & PRICE-LISTS RECEIVED:

Bausch & Lomb Optical Co.—New York. Price List. 1900.

Chicago Laboratory Supply and Scale Co.—Chicago. Catalogue of Laboratory Appliances. 1900.

Craig Keyless Lock Co.—Chicago. Price List. 1900.

Druggist Circular—New York. Price List. May, 1900.

Fritzsche Brothers—New York. Wholesale Price List. March, April and June, 1900.

The Kny Scheerer Co.—New York. Descriptive Catalogue of Laboratory Supplies. Part 1. Apparatus of Metal Part; 2. Apparatus of Glass and Porcelain. 1900.

Max Kaehler & Martini—Berlin. Preis Verzeichniss. 1. Nachtrag. 1900.

E. Sachsse & Co.—Leipzig. Vorzugs-Preisliste. March, 1900.

E. Sachsse & Co.—Leipzig. Wholesale Price List. March, 1900.

E. H. Sargent & Co.—Chicago. Price list of Analytical chemicals. January, 1900.

A. H. Thomas—Philadelphia. Laboratory Utensils of Metal. Circular B.

W. R. Warner & Co.—Philadelphia. Price list of Reliable Specialties. 1899.

Whitall Tatum & Co.—New York. Price list of Laboratory Glassware and Sundries. 1900.

**Legal Trade-Mark Decisions.**—The prospects of gradually arriving at a better understanding of trade-marks and their real purpose are becoming brighter. This question is not only receiving attention in America, but in Europe as well as shown by decisions of French and German courts below.

**Only one Trade-mark.** Judge Jenkins of the United States court recently handed down the following decision in which he holds that a manufacturer or dealer is entitled to but one trade-mark for a single class of goods: "A trade-mark must denote origin. A trade-mark is defined by Mr. Upton to be the name, symbol, figure, letter, form or device adopted and used by a manufacturer or merchant in order to designate the goods he manufactures or sells, and distinguish them from those manufactured or sold by another, to the end that they may be known in the market as his, and thus enable him to secure such profits as result from a reputation for superior skill, industry or enterprise. The use of a thousand different trade-marks to designate the article and its origin

necessarily produces confusion, and fails of the single purpose of the trade-mark. This consideration has led me to the conclusion that the complainant, the originator of perforated rolled toilet paper, would not do that which would blind the public mind to the originator and manufacturer of this article, and would tend to dissipate its trade. A court of equity cannot be impressed by an appeal to protect that which produces infinite confusion. It may be that in the struggle for trade the whims of retailers must be consulted, and that rivalry between dealers to present something attractive to the public eye must exist, but courts of equity do not sit to indulge the whims of purchasers, or to protect one in creating confusion. They sit to protect and enforce legal and equitable rights."

**Kresolin.** According to the "German "Reichs-Gericht" the "Wortzeichen" Kresolin cannot be protected. Only such words can be registered as trade-marks, which do not indicate the character of the article. The fact that the word "Kresolin" is a newly coined word does not alter the case. According to the law the important factor is this that the word must not be so constructed that, in accordance with the rules of language, it is made in the circles concerned, to apply to the nature of the article. Kresolin is a disinfecting agent containing kresol. The combination of words such as kresol with the ending "in" is common in manufacturing and chemical circles and the word "kresolin", therefore, is indicative of the nature of the preparation. As a result it becomes common property and cannot be registered as a trade-mark.

**Antipyrine as a Trade-mark.** — "On January 27, 1897, the Syndical Chamber of Pharmacists of the Seine brought an action against the Sté. Parisiene de Couleurs d'Aniline with the object of nullifying the trade-mark consisting of the word "antipyrine," registered by the company on February 16, 1888. Judgment was given in favor of the company on the ground that the inventor or proprietor of a pharmaceutical product can secure the exclusive right to the use of the name of such product, on the condition, however, that it is not an everyday and necessary article and does not reveal either the nature or special virtue of the product. The Judges of the lower Court considered the word "antipyrine" to be a purely fancy word chosen as such by Dr. Knorr, the inventor of the product, who might have selected any other name. Also the Sté. Parisienne, who control the production in France, have never ceased to claim their right to use the word, so that it cannot be said to have fallen into the public domain. The legal effect of this decision, which is now under appeal, remains to be considered. No pharmaceutical product can be patented in France, but if it can be protected by a trade-mark the effect is to all intents and purposes the same. But in order to make such trade-mark valid the denomination must be purely a fancy one, and not one that would show the special nature or medical virtue of the product indicated. If it were otherwise, every manufacturer of a pharmaceutical product would easily find a way of evading the law. Under these circumstances the only point to be examined is to know whether the word "antipyrine," supposing it to

have been regularly registered by the Sté. Parisienne de Couleurs d'Aniline, is a fancy word arbitrarily chosen in view of a legal registration, or if, on the contrary, it was intentionally adopted by Dr. Knorr in order to introduce the product to the medical world, and to answer the requirements of therapeutics. Everything points to the fact that the latter course was adopted by Dr. Knorr, and that the word "antipyrine" was intended to designate clearly a specific remedy against fever, is indicated by its etymology. Antipyrine is also used as an energetic dolorifuge, and as such the Société claims it might have been registered as a trade-mark under the word "analgesine," but this name would have revealed one of the virtues of the product."

Since the above statement was made by the C. & D. the Court of Appeal rendered the decision that the word antipyrine was not merely a fancy word, but indicates the therapeutic nature of the product and cannot, therefore, be registered as a trade-mark.

**A Menace to Pharmaceutical Education.** *—"Evidences of a human willingness to profit by the supposed wants of drug clerks are becoming very abundant in the advertising pages of drug journals the last year or two. Reference is made to various "institutes," "courses," etc., offering to teach enough about pharmacy to enable the student to "pass the Board" in various lengths of time say from six weeks to as many months.

To pass the Board! That is all that is necessary! Fill up with quiz compend wisdom; saturate yourself with chemical terms that mean nothing to you; load your memory with chemical formulas that mean still less; memorize, parrot-like, a number of stock definitions; be able to rattle off, without moving an eyelash, the specific gravities, etc., of the official iron preparations; and, behold! you are declared by the head crammer to be able to pass the Board!

To pass the Board! That is all there is, then, of pharmaceutical knowledge. Then a long surcease from care and study. A delightful period of forgetting all this six-weeks' wisdom. Only to pass the Board, in the first place—that is all. But why pass the Board? The law requires it. So, it seems, the mission of these various cramming institutions is not to enlarge their students' knowledge of pharmacy—it is merely to inflate them with a semblance of it, so that when the Board applies its measurements, their dimensions may be just a fraction too large to allow them to be rejected, according to the 67 (or whatever it may be) percent requirement.

The evil influence of such practices can hardly be over-rated. Since time immemorial a little learning has been accounted a dangerous thing, and in pharmacy—a calling that has much to do with human life—the rule would seem to apply with special significance. The worst feature about these institutions is not that they teach so little, which, indeed, is a grave enough charge to bring against them, but that they teach that little so badly that it serves no purpose of practical value. To be sure, it may enable the student to pass the Board, if he can get to the examination before his balloon bursts, but after that—what? Simply that he has accumulated an assortment of odds and ends of pharmaceutical lore, stray facts, and not-facts, all jumbled together, an endless hodge-podge, which will be forgotten for the most part as soon as it was acquired. Inconsequential, not based on the underlying principles that both explain various phenomena and fix them in the memory, is it any wonder that such "knowledge" is looked on as a dangerous thing?"

* From The New Idea.

# Pharmaceutical Review.

VOLUME 18. AUGUST, 1900. NUMBER 8.

## Editorial.

The American Association for the Advancement of Science held its annual meeting in New York City late in June. Time and place for this year's meeting had been selected with the object in view of enabling those college men and women who expected to attend the international congresses at Paris to stop over at New York and assist in making the meeting a success. However, the attendance—a registration of about 450—was not as large as had been hoped for. This number does not, however, fairly indicate the number of scientists gathered in New York during the last weeks in June, for many members of the numerous affiliated societies are not members of the A. A. A. S.

A year ago we called attention to Professor Orton's plea for greater centralization of national scientific interests. Owing to the affiliated societies there seems to have grown up a rather strong tendency toward decentralization. The printed proceedings evidently are not sufficient inducement to pay the annual membership fee. Evidently with the intention of overcoming this tendency if possible, the Association has accepted the offer of the Macmillan Company to send to each member of the Association a copy of Science for the payment of the annual membership fee of three dollars. The subscription price of this journal to ordinary subscribers is five dollars. It has not been a paying venture and yet it ought to be possible for one journal devoted to science in general to exist and even flourish in this country. Those who care for a journal of this kind will hereafter find it to

their advantage to join the A. A. A. S., while the journal itself may be placed on a better financial basis.

It is scarcely to be expected that a city like New York will take any special interest in an organization like the American Association with its affiliated societies. Besides the complaint of lack of interest on part of the city, criticism has come from certain quarters that the more popular phases of science did not receive sufficient attention. On the other hand, it has been stated that from the point of view of scientific work the New York meeting was the most successful in its history, with the possible exception of the anniversary meeting held two years ago at Boston. If the amateur dabbling in science, of which the A. A. A. S. has been accused not without foundation, has been the cause of the decentralization movement referred to, we must regard the present criticism as a good omen. However much we may be interested in our special lines of work and the organizations representing them, every one with broader sympathies and vision must realize the importance of a central national association that is strong scientifically as well as numerically.

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The Association has added another to its nine sections, namely that on physiology and experimental medicine. Besides teachers of the sciences, the society includes chemists, professional geologists, engineers and now also makes special provision for physicians. Whereas in the German association the physicians represented one-half of the work, the American association heretofore made no special provision for this class of scientists. A small number of our pharmaceutical teachers are interested in the A. A. A. S. and its work, but pharmacy as such has thus far received no special recognition. The time may come when American pharmacy will find itself constrained to demonstrate to American scientists, assembled in national association, that there is such a thing as a scientific aspect to pharmacy. The Scientific Section of the American Pharmaceutical Association may well court comparison with some of the sections of the A. A. A. S. and need not fear comparison with any.

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The programme of the joint sessions of the American Chemical Society and Section C of the A. A. A. S. is reproduced on another page of this issue and shows what can be accomplished by a union of forces, rather than by a splitting of energies. Section C

is thereby rendered one of the strongest, if not the strongest, of the American Association, neither does the Chemical Society suffer by this cooperation. Whereas the Boston meeting was remarkable for the absence of discussion, the attack upon the dissociation theory by Dr. Kahlenberg seems to have brought life into an audience that is otherwise in danger of temporary mental stagnation due to an uncomfortable temperature and the monotonous reading of papers.

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About one-half of the state and territorial associations have held their meetings, brief accounts of which are given in the Supplement of this issue. It would be foolish to expect more than average meetings this year any more than in previous years. As a rule, the attendance seems to have been satisfactory to those most concerned and almost each association announces a fair or more than fair acquisition of new members. This one ought to expect if only one-half of the enthusiasm accorded the delegates of the National Association of Retail Druggists is genuine. If successful, the work of the N. A. R. D. ought to bring out the druggists of the various states to state as well as local meetings. The fact that the New Jersey Association has withdrawn from the N. A. R. D. does not at all imply lack of sympathy with this movement on part of the New Jersey druggists as has been insinuated. They can join as local organizations, as recommended, and the state organization voted to contribute its share of the expense of maintaining the national organization. That some of the New Jersey druggists are opposed to the principles and methods of the N. A. R. D. is by no means a discredit to their sagacity and business principles.

With few exceptions the finances of the various associations are in good condition. It is true that the Louisiana association has a small balance because it did not print its proceedings of last year, also that the secretary of the Missouri association had his salary cut in two so that the association might contribute its share to the N. A. R. D., but another society increased its dues in order to meet the assessment and New Jersey has a cash balance of over $2000. It would be gratifying indeed if the greater portion of this balance could be permanently invested as a fund.

Whereas interest in commercial matters was quite general, scientific and technical matters apparently were at a discount. A few associations, notably Pennsylvania and Missouri had a fair number

of papers of a varied nature; in New York legislative matters were of supreme interest and the few papers presented had to be read by title. In Indiana a druggist states that the session was one of the most uninteresting, that a lot of college pupils read papers, yet but ten papers all told are reported. If such criticism were isolated it would condemn itself. It is a sad comment indeed. It is only too true that annual meetings of state associations are none too favorable for the presentation of technical matters; but as long as we have no local organizations to take up this phase of pharmaceutical work, it is to be hoped that papers will not become obsolete everywhere.

One matter, possibly of supreme import, is the action of the New York association concerning the requirement of college graduation for registration and the placing of the pharmaceutical curriculum under the control of the Regents of the University of the State of New York. Whereas the first proviso is of great importance as an example to other states, the second is of greatest moment in other respects as well as far as New York is concerned. It is a bold stroke in the right direction, whatever personal opinion may hold of the idea of compulsory college graduation. Pennsylvania was reminded of the fact that she also has expressed herself in favor of the same idea, but apparently did nothing. Louisiana, after a lively discussion is reported as having voted unanimously in favor of such a pre-requisite. Whereas New York, wisely it seems to us, is going to allow time to overcome any remnant of opposition, her southern sister association is going to ask for immediate legislation in this direction.

As to the amusement features, even some of the "drug-journals" are getting tired of reporting who succeeded in devouring a pie within the minimum of time or who ran the fastest race etc. We hope that the Nebraska association will be successful in its idea of bringing physicians and pharmacists of her state into closer touch by holding medical and pharmaceutical meetings at the same time and place. We hope also, that if successful in bringing the various associations together, the druggists will not entertain the physicians with a "fantastic parade" to which the general public of Beatrice were treated. Such a performance would unavoidably widen the breach between the representatives of the two callings.

# International Commission on Atomic Weights.

One of the first questions that will have to be decided by the Committee of Revision of the United States Pharmacopoeia is that of the atomic weights to be used. It is necessary to decide this question as early as possible in order that the various members of the committee, also such experts as are to be employed, may use the same atomic weights in order to make results comparable; also to avoid recalculation for the final draft of the revised text.

That there is no strict uniformity every one knows. The American Chemical Society has a Committee on Atomic Weight, the seventh annual report of which appeared in the February number of the Society's journal. We are informed by Professor F. W. Clarke that the year 1899 has not been remarkably prolific in determinations of atomic weights. The committee ends its report by giving a table of atomic weights revised for the current year. It also shows the differences of the principal standards. It is herewith reproduced.

| | Clarke. | | | |
|---|---|---|---|---|
| | H=1. | O=16. | Richards. | German. |
| Aluminium | 26.9 | 27.1 | 27.1 | 27.1 |
| Antimony | 119.5 | 120.4 | 120.0 | 120. |
| Argon | ? | ? | 39.9? | 40.? |
| Arsenic | 74.45 | 75.0 | 75.0 | 75. |
| Barium | 136.4 | 137.40 | 137.43 | 137.4 |
| Bismuth | 206.5 | 208.1 | 208.0 | 208.5* |
| Boron | 10.9 | 11.0 | 10.95 | 11. |
| Bromine | 79.34 | 79.95 | 79.955 | 79.96 |
| Cadmium | 111.55 | 112.4 | 112.3 | 112. |
| Caesium | 131.9 | 132.9 | 132.9 | 133. |
| Calcium | 39.8 | 40.1 | 40.1 | 40. |
| Carbon | 11.9 | 12.0 | 12.001 | 12.00 |
| Cerium | 138.0 | 139.0 | 140. | 140. |
| Chlorine | 35.18 | 35.45 | 35.455 | 35.45 |
| Chromium | 51.7 | 52.1 | 52.14 | 52.1 |
| Cobalt | 58.55 | 59.00 | 59.00 | 59. |
| Columbium | 93.0 | 93.7 | 94. | 94. |
| Copper | 63.1 | 63.6 | 63.60 | 63.6 |
| Erbium | 164.7 | 166.0 | 166. | 166.? |
| Fluorine | 18.9 | 19.05 | 19.05 | 19. |
| Gadolinium | 155.8 | 157.0 | 156.? | ..... |

* The atomic weights marked with an * are considered to be wrong.

? Indicates lack of homogeanity of element or more than unit differences in the atomic weight.

| | Clarke. H=1. | Clarke. O=16. | Richards. | German. |
|---|---|---|---|---|
| Gallium | 69.5 | 70.0 | 70.0 | 70. |
| Germanium | 71.9 | 72.5 | 72.5 | 72. |
| Glucinum | 9.0 | 9.1 | 9.1 | 9.1 |
| Gold | 195.7 | 197.2 | 197.3 | 197.2 |
| Helium | ? | ? | 4.0? | 4.? |
| Hydrogen | 1.000 | 1.008 | 1.0075 | 1.01 |
| Indium | 113.1 | 114.0 | 114. | 114. |
| Iodine | 125.89 | 126.85 | 126.85 | 126.85 |
| Iridium | 191.7 | 193.1 | 193.0 | 193. |
| Iron | 55.6 | 56.0 | 56.0 | 56. |
| Lanthanum | 137.6 | 138.6 | 138.5 | 138. |
| Lead | 205.36 | 206.92 | 206.92 | 206.9 |
| Lithium | 6.97 | 7.03 | 7.03 | 7.03 |
| Magnesium | 24.1 | 24.3 | 24.36 | 24.36 |
| Manganese | 54.6 | 55.0 | 55.02 | 55. |
| Mercury | 198.50 | 200.0 | 200.0 | 200.3 |
| Molybdenum | 95.3 | 96.0 | 96.0 | 96. |
| Neodymium | 142.5 | 143.6 | 143.6 | 144.? |
| Nickel | 58.25 | 58.70 | 58.70 | 58.7* |
| Nitrogen | 13.93 | 14.04 | 14.045 | 14.04 |
| Osmium | 189.6 | 191.0 | 190.8 | 191. |
| Oxygen | 15.88 | 16.000 | 16.0000 | 16.00 |
| Palladium | 106.2 | 107.00 | 106.5 | 106. |
| Phosphorus | 30.75 | 31.0 | 31.0 | 31. |
| Platinum | 193.4 | 194.9 | 195.2 | 194.8 |
| Potassium | 38.82 | 39.11 | 39.140 | 39.15 |
| Praseodymium | 139.4 | 140.5 | 140.5 | 140.? |
| Rhodium | 102.2 | 103.0 | 103.0 | 103. |
| Rubidium | 84.75 | 85.4 | 85.44 | 85.4 |
| Ruthenium | 100.9 | 101.7 | 101.7 | 101.7 |
| Samarium | 149.2 | 150.3 | 150.0 | 150.? |
| Scandium | 43.8 | 44.1 | 44. | 44.1 |
| Selenium | 78.6 | 79.2 | 79.2 | 79.1 |
| Silicon | 28.2 | 28.4 | 28.4 | 28.4 |
| Silver | 107.11 | 107.92 | 107.930 | 107.93 |
| Sodium | 22.88 | 23.05 | 23.050 | 23.05 |
| Strontium | 86.95 | 87.60 | 87.68 | 87.6 |
| Sulphur | 31.83 | 32.07 | 32.065 | 32.06 |
| Tantalum | 181.5 | 182.8 | 183. | 183. |
| Tellurium | 126.5 | 127.5? | 127.5? | 127. |
| Terbium | 158.8 | 160. | 160. | ..... |
| Thallium | 202.61 | 204.15 | 204.15 | 204.1 |
| Thorium | 230.8 | 232.6 | 233. | 232. |
| Thulium | 169.4 | 170.7 | 170.? | ..... |
| Tin | 118.1 | 119.0 | 119.0 | 118.5* |

| | Clarke. H=1. | Clarke. O=16. | Richards. | German. |
|---|---|---|---|---|
| Titanium | 47.8 | 48.15 | 48.17 | 48.1 |
| Tungsten | 182.6 | 184. | 184.4 | 184. |
| Uranium | 237.8 | 239.6 | 240. | 239.5 |
| Vanadium | 51.0 | 51.4 | 51.4 | 51.2 |
| Ytterbium | 171.9 | 173.2 | 173. | 173. |
| Yttrium | 88.3 | 89.0 | 89.0 | 89. |
| Zinc | 64.9 | 65.4 | 65.40 | 65.4 |
| Zirconium | 89.7 | 90.4 | 90.5 | 90.6 |

The first and second columns give the committee's set of values, based upon both fundamental standards, viz. hydrogen = 1; and O=16. Next is given Richards' table. revised for 1899, and finally that of the German Chemical Society. The values of Clarke have been reprinted with symbols added, and have been distributed in tabular form by the Chairman of the Revision Committee. The values based on hydrogen are in heavy-faced type and are intended for use, temporarily at least.

Attention has been called to the standing committee of the American Chemical Society. Mention has also been made of the atomic weights of the German Chemical Society. It will be seen from this that the question of atomic weights is one that has not only concerned individuals but national bodies as well. And well it might if the importance of uniformity is taken into consideration. Such uniformity, however, should not only be national but international. As a matter of fact this question has already been made one for international action. An International Commission on Atomic Weights has been formed, the first report of which has just appeared in the Berichte der deutschen chemischen Gesellschaft (p. 1847).

The history of this commission is brief. Toward the close of the year 1897, the council of the German Chemical Society appointed a committee consisting of Professors H. Landolt, W. Ostwald, and K. Seubert to make suggestions which might bring about uniformity in the use of atomic weights employed in analytical calculations. The committee made its first report November 14, 1898 (Berichte 31, p. 2761) in which it recommended that oxygen = 16 be hereafter taken as the standard, not H = 1. It also gave a list of most probable values which might serve for practice. These values are those of column four of the table reproduced above. The committee closes its report by calling attention to the desirability of an international agreement.

The Council of the German Chemical Society before the close of the same year instructed its committee to invite chemical societies and kindred organizations of all countries to join in the formation of an International Commission on Atomic Weights (Berichte 31, p. 2949).

On March 30, 1899, the committee issued an invitation in German, French and English. Up to March 30, 1900 no response had been received from Denmark, France and Norway, but the following countries and societies are represented.

**America.**

I. American Academy of Arts and Science. (Jan. 17, 1900.)
Prof. Theod. W. Richards, Harvard University, Cambridge, Mass.—Chairman.
Prof. Wolcott Gibbs, Newport, Rhode Island.
Prof. Ira Remsen, John Hopkins University, Baltimore, Md.

II. American Chemical Society. (May 19, 1899.)
Prof. F. W. Clarke, Smithsonian Institution, Washington, D. C.—Chairman.
Prof. J. W. Mallet, University of Virginia, Charlotteville, Va.
Prof. Edw. W. Morley, Cleveland, Ohio.
Prof. T. W. Richards, Harvard College, Cambridge, Mass.
Prof. Edgar F. Smith, University of Pennsylvania, Philadelphia.

**Austria-Hungary.**

I. Chemisch-Physikalische Gesellschaft. Wien. (June 13, 1899.)
Prof. A. Lieben, Universität, Wien.
Prof. G. Vortmann, Technische Hochschule, Wien.
Prof. R. Wegscheider, Universität, Wien.

II. Verein Oesterreichischer Chemiker in Wien. (March 31, 1900.)
Prof. M. Bamberger, Technische Hochschule, Wien.
Prof. F Emich, Technische Hochschule, Graz.
Dr. F. Dafert, Landwirthsch.-chemische Versuchsstation, Wien.

III. K. Ungarische Academie der Wissenschaften. Budapest. (April 11, 1900.)
Prof. C. von Than, Universität, Budapest.
Prof. Béla v. Lengyel, Universität, Budapest.
Prof. L. von Ilosvay, Joseph Polytechnic., Budapest.

IV. Chemisch-Mineralogische Section der K. Ungarischen Naturwissenschaftlichen Gesellschaft. (April 11, 1900.)
Prof. V. Wartha, Josef Polytechnic., Budapest.
Dr. Jul. Tóth, Oberchemiker des ungarischen Landes-Versuchs-Institutes, Budapest.

## Belgium.

I. Académie Royale des Sciences, des Lettres et des Beaux Arts de Belgique. (April 17, 1899.)

Prof. Louis Henry, Université de Louvain.
Prof. Walther Spring, Université de Liège.

II. Association Belge des Chimistes. (December 7, 1899.)

Prof. L. L. de Koninck, Université de Liège.
Prof. Léon Crismer, École militaire de Bruxelles.
Mr. Ad. Vandenberghe, Préparateur à l'Université de Gand. — Substitute.

## England.

Chemical Society of London. (May 17, 1900.)

Prof. Thorpe, London.
Prof. Tilden, London.
Prof. Dunstan, London.
Dr. Scott, London.
Prof. Meldola, London.
Sir William Crookes, London.
Prof. Dewar, London.
Dr. Russell, London.

## Germany.

I. Deutsche Chemische Gesellschaft.

Prof. H. Landolt, Universität, Berlin.
Prof. W. Ostwald, Universität, Leipzig.
Prof. K. Seubert, Technische Hochschule, Hannover.

II. Verein Deutscher Chemiker. (18. Juli 1899.)

Prof. Jul. Bredt, Technische Hochschule, Aachen.
Prof. Hugo Erdmann, Universität, Halle.
Prof. Ferd. Fischer, Universität, Göttingen.
Prof. Wilh. Fresenius, Wiesbaden.
Prof. J. Volhard, Universität, Halle.
Prof. Clem. Winkler, Bergacademie, Freiberg i. S.
Prof. Joh. Wislicenus, Universität, Leipzig.

III. Verband Selbstaendiger Oeffentlicher Chemiker Deutschlands. (April 17, 1899.)

Prof. Wilhelm Fresenius, Wiesbaden.
Dr. Ritter von Grueber, Vienenburg a. Harz.

IV. Commission Deutscher Nahrungsmittel-Chemiker zur Bearbeitung von Vereinbarungen zur Einheitlichen Untersuchung von Nahrungsmitteln. (April 21. 1899.)

Reg.-Rath Prof. von Buchka, Kaiserl. Gesundheitsamt, Berlin.
Prof. A. Hilger, Universität, München, Substitute.

V. Deutsche Pharmaceutische Gesellschaft. (April 24, 1899.)
Prof. H. Thoms, Universität, Berlin.

**Holland.**

Koninklijke Akademie van Wetenschappen te Amsterdam. (July 5, 1899.)
Prof. J. M. van Bemmelen, Universität, Leiden.

**Italy.**

Società Chimica di Milano. (June 4, 1899.)
Prof. Stan. Cannizzaro, Università, Roma.
Prof. G. Körner, Istituto superiore di Agricoltura, Milano.
Prof. Raff. Nasini, Università, Padova.

**Japan.**

Tōkyō Chemical Society. (July 12, 1899.)
Prof. J. Sakurai, Science College, Imp. University, Tōkyō.
Prof. K. Ikeda, Science College, Imp. University, Tōkyō.*

**Russia.**

Société Physico-Chimique, Section de Chimie. St. Petersbourg. (June 13 to 25, 1899.)
Prof. Nic. Beketoff, Université, St. Petersbourg.

**Sweden.**

Kongl. Vetenskaps Akademien. Stockholm. (May 10. 1899.)
Prof. H. G. Söderbaum, Experimentalfältet, Albano bei Stockholm.

**Switzerland.**

Schweizerische Chemische Gesellschaften. (October 30, 1899.)
Prof. E. P. Treadwell, Polytechnicum, Zürich.
Prof. C. Graebe, Universität, Genf.
Prof. G. Kahlbaum, Universität, Basel.

An organization of more than fifty members from various countries having been effected, the individual members were asked (Dec. 15, 1899) to reply to the following three questions:

1) Shall O = 16 be hereafter taken as the basis for the calculation of atomic weights.

2) Shall as many decimals be given of the atomic weights so that the last decimal figure is correct to less than a half unit (of the last decimal); if not which other procedure is recommended.

3) Is it desirable that a closer commission be formed which is to have in charge the continuous revision of a table of atomic weights and its annual publication? If yes, it is suggested that each organization appoint one member for this committee.

* At the present time in Leipzig, Germany.

Twenty-nine replies were received containing the views of forty-nine members. The letters are printed in full in No. 12 of the Berichte. The summary only is herewith given.

*I. As to the Basis for Atomic Weights.*

The following votes were cast:

| | **O = 16.** | **H = 1.** |
|---|---|---|
| America | Richards.<br>Gibbs.<br>Remsen.<br>Smith. | Mallet. |
| Austria | Lieben.<br>Vortmann.<br>Wegscheider.<br>Bamberger.<br>Emich.<br>Dafert. | |
| Belgium | Henry. | |
| England | Thorpe.<br>Tilden.<br>Dunstan.<br>Scott.<br>Meldola.<br>Crookes.<br>Dewar.<br>Russel. | |
| Germany | Landolt.<br>Ostwald.<br>Seubert.<br>v. Grueber.<br>v. Buchka.<br>Thoms.<br>Fresenius. | Bredt.<br>Erdmann.<br>Fischer.<br>Volhard.<br>Winkler.<br>Wislicenus.<br>Fresenius. |
| Holland | van Bemmelen.<br>Hoogewerff.<br>Bakhuis Roozeboom. | |
| Hungary | v. Than.<br>v. Lengyel.<br>v. Ilosvay.<br>Wartha.<br>Tóth. | |
| Italy | Cannizzaro.<br>Nasini. | Cannizzaro. |
| Japan | Sakurai.<br>Ikeda. | |
| Sweden | Söderbaum. | |
| Switzerland | Treadwell.<br>Graebe.<br>Kahlbaum. | |

Of the 49 votes cast:

40 are in favor of O = 16
7 " " " " H = 1
2 " " " " O = 16 and H = 1.

Historically but two elements have been seriously suggested, the atomic weights of which are to serve as the basis for the computation of the relative weights of the other elements. Dalton, to whom we owe the modern atomic theory, suggested hydrogen as unit. As a matter of principle this seems the most natural and correct, though the possibility is by no means excluded that elements of even lesser density than hydrogen may yet be discovered. Berzelius, however, whose propensity for elementary analyses is well known, suggested oxygen as basis. This he did not only because of the important role which oxygen played in chemistry since the revolutionary ideas of Lavoisier gained ground, and because of his own (Berzelius') dualistic theory, but for purely practical reasons as well. Further, Berzelius was more careful in the determination of atomic weights than Dalton and also gave due weight to the property of oxygen of combining with most elements whereas hydrogen does not. While the ratio of combination of oxygen with most elements can, therefore, be ascertained directly, that of hydrogen cannot and is based on its ratio of combination with oxygen. To emphasize, as it were, the arbitraryness of this basis, the atomic weight of oxygen was first placed as 1 and 10 (Wallaston's suggestion), then as 100 (Berzelius). Recognizing the impracticability of these figures it was placed back at 8 (theory of equivalents) and later at 16 (theory of atoms and molecules . Both of these latter figures are in reality a recognition of the unity of hydrogen as basis for the atomic weight.

It is claimed that the recurrence to hydrogen as unit is due to the fact that the unduly developed dualistic ideas of Berzelius met with such strong opposition since the evolution of organic chemistry. In order to materially distinguish the chemical notation of the new school from that of the old, chemists, led by Laurent and Gerhardt, went back to Dalton's original idea. To properly understand this transition, it should be remembered that about the middle of this century, when it occurred, Prout's hypothesis was still in favor. Neither were the methods of measurement so accurate as to throw material doubt on the correctness of the ratio O : H = 16 : 1.

Dumas' investigation on the composition of water and the sub-

stantiation of his results by Erdmann and Marchand served for a time as a basis for the ratio O:H. The accuracy of atomic weight determinations was, however, materially increased by the classical investigations of Merignac and especially those of Stas. Both investigators did not take as basis H=1, but O=16. The principal advantage of this change was that the atomic weights could be computed more directly and became independent of any further fluctuations in the changes of the ratio H:O as determined by later and more accurate experiments. As a matter of fact, most of the older calculations being based on the assumed ratio of O:H= 16:1, the change did not render necessary a recalculation of the atomic weights then in use but based on hydrogen as unit.

This change back to oxygen, however, did not become general. Lothar Meyer and K. Seubert went over the entire field using all the material available and in 1883 published the results of their recalculations based on the ratio O:H=15.96:1. This ratio they based on the experiments of Dumas, and of Erdmann and Marchand on the composition of water, also on the density determinations of Regnault. The table of atomic weights of Meyer and Seubert based on O=15.96 became widely distributed and is found in many text and reference works of to-day.

The ratio 1:15.96 has, however, been discredited by the work of Morley* and others who with extreme accuracy ascertained the ratio 1:15.879. Although it is not very probable that this ratio will be supplanted by an other in the immediate future, it certainly is desirable to avoid the possibility of repeated changes. As long as hydrogen is taken as the basis, a change in the ratio O:H will necessitate a recalculation of all the atomic weights.

This brief historical survey may assist those not familiar with the subject in getting a better understanding of the present situation. It is, however, one thing to devise a table of atomic weights based on sound principles and the best experimental evidence for purely scientific purposes, and quite another to prepare a table which chemists the world over will agree upon to use in actual practice.

1) First of all, a basis should be agreed upon that will necessitate the fewest if any changes. Of the two elements that have been proposed seriously so far, oxygen is preferable to hydrogen. It seems

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* Comp. also Morley's address as President of the American Chemical Society in the February number of the Society's journal.

altogether out of the question that any other element would at all be seriously considered by chemists the world over.

2) Secondly, that element should serve as basis the combining ratio of which can be expressed in whole numbers in the largest number of cases, at least so far as the more common elements are concerned. With oxygen as basis, the atomic weights of carbon, nitrogen, sulphur, phosphorus, iron, sodium and others can be expressed in whole numbers with but slight discrepancy.

3) The question of custom or usage in the various countries will necessarily enter into consideration. Not only have the atomic weights O=16 and C=12 entered into thousands of computations which have been recorded in numerous reference works on physical and organic chemistry, but several of the tables more or less in common use in different countries are based on O=16. Even Professor Seubert, one of the members of the Commission of the German Chemical Society and co-author with the late Professor Meyer of the table largely used and based on H=1, is in favor of placing O=16 for practical purposes in order to secure international agreement.

In deciding which basis is to serve as standard for the next edition of the United States Pharmacopoeia, the question is not so much whether H=1 or O=16 is to be preferred for theoretical or didactic purposes, but a question of practical expediency. Aside from the arguments presented by the members of the German and International Commissions, the recorded vote of the members of the latter commission seems to make necessary the adoption of the basis O=16 as standard. *E. K.*

## The Nature of Commercial Sanguinarine Nitrate.

By *J. O. Schlotterbeck.*

According to the most recent scientfic literature, sanguinarine is a white crystalline alkaloid, contained in sanguinaria and in a few related plants, whose salts are blood-red in color. In our work on *Bocconia cordata*[1] we encountered a base that was nearly white in the impure state, which became bright red upon the addition of acids. As there is no other alkaloid which possess this remarkable property, we felt safe in claiming that we had found the alkaloid sanguinarine.

[1] Proc. Am. Pharm. Assn., 1900.

As the separation and purification of the alkaloid obtained from *Bocconia* progressed, we found it impossible to isolate the pure alkaloid sanguinaria either because of the minute quantity present or because of possible decomposition during manipulation. As it was desired to learn more of the nature of this highly interesting alkaloid, and as there was no more of the rhizome of Bocconia to be had for another year, it was deemed advisable and unobjectionable to separate it from sanguinaria which is supposed to contain it in large quantity. Our first impulse was to extract the rhizome, but as concentrated preparations, such as fluid extracts and extracts, can be obtained from manufacturers, we decided to recover the alkaloid from the extract which was claimed to contain, by assay, all the way from 8 to 17 p. c. of sanguinarine. A pound of the extract ought to contain, therefore, from 40 to 80 grams of alkaloid.

Two pounds of the extract were treated by several methods for the extraction of alkaloids and to our astonishment the yield was less than 1 p. c., showing that decomposition had probably taken place during evaporation of the extract.

Attention was then turned to the commercial alkaloidal product of sanguinaria called sanguinarine nitrate, which is offered by several manufacturing pharmacists. Three different specimens were secured for the recovery of the free alkaloid sanguinarine. All were in powder form, and varied in color from an orange-red to a dull terra cotta. In cold water they were only slightly soluble, but they colored the liquid distinctly. Boiling water dissolved them quite readily, from which they separated again on cooling. Boiling alcohol dissolved them almost completely to a transparent, deeply colored solution.

A quantity was dissolved in hot water, cooled to just the precipitating point and then made alkaline with ammonia water. The alkaloids were precipitated in the form of a violet colored curd. Since the pure alkaloids are all colorless, this violet color at once indicated impurity. The precipitated alkaloids were shaken with three portions of ether, the ethereal solutions combined and filtered. The ether solution was decidedly fluorescent (blue) and of a light red color. This fluorescence we have learned is due to a coloring matter or decomposition product of one or more of the alkaloids and is not a property of the pure alkaloid itself. A voluminous, almost black precipitate separates and collects between the ethereal and aqueous layers.

The ethereal solution was then filtered, shaken out with water acidulated with acetic acid, and the acid aqueous solution again precipitated with ammonia water. This cycle of manipulations was repeated for at least ten times or until the precipitate of the alkaloids was nearly white. The final precipitate was again dissolved in ether and the ether removed by slow evaporation. It was noticed that as a higher state of purity of the alkaloids was obtained the fluorescence gradually disappeared, as well as the reddish tint which is very persistent.

The residue from the ether solution was taken up with a very small quantity of chloroform in which the alkaloids are very soluble, a mixture of acetic ether and alcohol added, and then set aside to crystallize. This was found to be a very excellent crystallizing medium since the alkaloids are not very soluble in cold alcohol, but freely so in acetic ether. As the aceeic ether slowly evaporates, the alkaloid is gradually thrown out of solution in the form of crystals.

The first crop of crystals was pinkish in color, but by many recrystallizations they were obtained pure white. It was found necessary to dry them in an atmosphere of ammonia or to wash previously with a few drops of ether containing a very small amount of ammonia to prevent the alkaloid from becoming colored in the air.

The free alkaloid was converted into the sulphate and nitrate, but instead of forming blood-red salts, they were bright lemon-yellow. As the names are understood among chemists, this is chelerythrine and not sanguinarine.

The mother liquors were united and more chelerythrine and small traces of protopine and homochelidonine separated and identified. After treating the other two samples of sanguinarine nitrate in precisely the same manner, we can say that the commercial article is either a nearly pure chelerythrine or a mixture of all the alkaloids of sanguinaria with more or less decomposition products.

The unfortunate confusion which has arisen in regard to the use of the names sanguinaria and chelerythrine and the various substances designated by these names renders necessary at this point a review of the results of earlier workers.

As the names have adjusted themselves, sanguinarine is applied to the chemical individual of the formula $C_{20}H_{15}NO_4 + H_2O_1$, a colorless alkaloid yielding scarlet or blood-red salts; while chelerythrine is restricted to the methyl derivative of sanguinarine, a colorless base yielding lemon-yellow salts.

The name sanguinarine was first applied in 1819 to the mixture of alkaloids obtained from *Sanguinaria canadensis* by Dana.[1] He believed that he was working with a single individual, but later results showed that his product was a mixture of chelerythrine, with smaller amounts of sanguinarine, $\beta$- and $\gamma$-homochelidonine. Whatever the mixture may have consisted of, we must not lose sight of the fact that his sanguinarine possessed the remarkable and striking characteristic of forming blood-red salts.

The name chelerythrine was first applied in 1839 by Probst[2] to one of the two bases which he separated from *Chelidonium majus* "on account of the intensely red color of its salts." In the same year he also prepared his chelerythrine from *Glaucium luteum*, and also prepared Dana's sanguinarine from *Sanguinaria canadensis.* From these two researches he decided that the two substances were identical.

In 1843 Schiel[3] continued work along this line and in 1856 published an article[4] holding the identity of chelerythrine and sanguinarine both in composition and properties.

The first mention of attempts to obtain crystals is by Naschold[5] in 1869, who obtained sanguinarine (?) from alcohol in "warts, or warty masses, or transparent needles,"[6] and reports the melting point 160—5°.

From the laboratory of E. Schmidt comes the most recent work, where for the first time the compounds were obtained pure.

After it was quite conclusively proven that sanguinarine and chelerythrine as originally applied were identical, König[7] retains the name sanguinarine for the red salt-forming alkaloid and applies the name chelerythrine to the yellow salt-forming alkaloid. This has added greatly to the confusion which already existed. As for the name itself it is etymologically incorrect to apply the name of chelerythrine to a yellow body.

The writer believes that the name sanguinarine should be applied to the yellow body, since it is the predominating constituent and to the predominating alkaloid of sanguinarine, which is the yellow salt-

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1 Mag. f. Pharm., 23, p. 125; Annals Lyc. N. Y., 2, p. 245.
2 Ann. Pharm. (Liebig), 29, p. 124; 31, p. 241.
3 Ann. Pharm. (Liebig), 43, p. 235.
4 Jour. prakt. Chem., 67, p. 61.
5 Jour. f. prakt. Chem., 106, p. 385.
6 This was doubtless the yellow body.
7 Ztschr. f. Naturw., 63, p. 639; Chem. Centrlbl., 1, p. 322.

forming one. From etymological reasons the name sanguinarine may appear just as objectionable as chelerythrine since it means blood-like, but this objection does not hold good for the reason that the name is derived from sanguinaria and not from sanguis. Had the predominating alkaloid been a white salt-forming one, it would have also received the name sanguinarine according to the custom in naming constituents.

Since sanguinarine nitrate is being used more and more in preparations used by the practicing profession and as it represents the activity of the drug to a marked degree, it may be entitled to a position in the next United States Pharmacopœia. No better way can harmony be brought out of the confusion which exists in the nomenclature of this substance than by its description in the Pharmacopœia.

# On the Use of Inorganic Acids in the Preparation of Galenicals.*

By *Richard Strauss.*

**Hydrochloric Acid** (continued).

**Ergot.** A. W. Postans[54] in 1878 states that no acid is necessary to fix the volatile principle during the evaporation of the percolate in preparing fluid extract of ergot. In the United States Pharmacopœia[55] of 1880 diluted hydrochloric acid was substituted for acetic acid in the preparation of fluid extract of ergot, 6 pts. to 100 pts., being used. A. Robbins[56] in 1883 discussing this preparation states that recent investigations show that the addition of an acid before evaporation is unnecessary, but if any is to be used acetic acid is better than hydrochloric acid. C. S. Hallberg[57] in 1884 emphasizes the same facts. Kobert[58] claims cornutine to be the most active principle of ergot and extracts it with water acidulated with hydrochloric acid. He thinks that the United States Pharmacopœia 1880 fluid extract of ergot approaches more nearly the fresh drug in therapeutic action than those of other pharmacopœias. In *Extractum Secalis Cornuti fluidum*[59] of the German Pharmacopœia hydrochloric

* Continued from p. 303.

54 Pharm. Jour., 38, p. 212.
55 U. S. Pharmacopœia, 1880, p. 117.
56 Am. Jour. Pharm., 55, p. 122.
57 West. Drugg., 6, p. 3.
58 Chem. and Drugg., 37, p. 551.
59 Pharmacopœa Germanica, III, p. 111.

acid is added before evaporating the second portion of the percolate. The Swiss Pharmacopœia[60] directs the use of diluted hydrochloric acid in the preparation of *Extractum Secalis Cornuti.* The Danish Pharmacopœia[61] directs the addition of hydrochloric acid to the percolate before evaporation. The Norwegian Pharmacopœia[62] directs the same method to be used.

**Haematoxylon.** L. Siebold[63] in 1887 recommends unfermented logwood to be extracted with boiling water slightly acidulated with hydrochloric acid in the preparation of fluid extract of logwood.

**Ignatia.** P. Mayer[64] in 1863 extracted ignatia with alcohol and boiling alcohol acidulated with hydrochloric acid and finds that the first menstruum extracts more strychnine and the last more brucine.

**Ipecacuanha.** J. C. Shenstone[65] in 1886 performed a series of experiments with wine of ipecac using natural and artificial wine as solvents to which had been added either malic, acetic or hydrochloric acids in connection with sugar or glycerin. The wines made with hydrochloric acid contained 25 percent of acid and showed a perceptible precipitate at the end of seven days, a small precipitate being present at the end of six months. Paul and Cownley[66] in 1895 made several tests with alkaloids of ipecac, emetine and cephaëline, making solutions in hydrochloric and acetic acids, then evaporating to dryness and assaying the residues. They found that there was hardly any loss when acidified with hydrochloric acid, but with acetic acid there was considerable loss; further while the color of the hydrochloric acid solution did not change, the acetic acid solutions did.

**Nux Vomica.** F. Mayer[67] in 1863 extracted nux vomica with alcohol and boiling alcohol acidulated with hydrochloric acid and finds that the former extracts more brucine and the latter more strychnine. This is the reverse of the extraction of ignatia under analogous conditions (q. v.).

**Opium.** Nichol[68] gives a formula for a Tincture of Opium containing about 5 percent of hydrochloric acid made by maceration of the gum with dilute acid for fourteen days. G. W. Kennedy[69] in 1875 recommends a *Tinctura Opii Muriatica* which he prepares by

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60 Pharmacopœa Helvetica, III, p. 110.
61 Danish Pharmacopœia, 1893, p. 148.
62 Pharmacopœa Norwegica, III, p. 97.
63 Year Book Pharm., 1887, p. 550.
64 Proc. Am. Pharm. Assoc., 11, p. 248.
65 Pharm. Jour., 46, p. 279.
66 Pharm. Jour., 55, p. 2.
67 Proc. Am. Pharm. Assoc., 11, p. 248.
68 Griffith's Formulary, 2nd ed., p. 341.
69 Am. Jour. Pharm., 47, p. 497.

macerating gum opium during fourteen days and contains about 7 percent of hydrochloric acid.

**Pilocarpus.** G. W. Kennedy[70] in 1881 extracts the pilocarpine from pilocarpus leaves by percolating the powdered drug with water containing one fluid drachm of hydrochloric acid in a pint of menstruum and evaporating the percolate to a soft extract, then neutralizing with sodium bicarbonate and extracting the alkaloid with chloroform.

**Zea.** Spencer Phillips[71] in 1886 prepares a fluid extract of corn silk using diluted alcohol as a menstruum and adding one ounce of diluted hydrochloric acid to the percolate before evaporating with the evident intention of fixing the volatile principles.

### Sulphuric Acid.

**Aconite.** Liegeois and Hottot[1] in 1863 give a process for preparing aconitine by macerating the coarsely powdered root in alcohol and diluted sulphuric acid, expressing the extract and distilling off the alcohol, then separating the oil from the aqueous extract and extracting the alkaloid from the latter with ether, after neutralizing with magnesia.

J. Eberle[2] in his Materia Medica gives a formula for an infusion of cinchona, the menstruum for which contains two drachms of elixir of vitriol (alcoholic diluted sulphuric acid) to a pint of water. *Infusum Cinchonae Compositum* was made official in the United States Pharmacopœia of 1840 and has been continued in all the succeeding revisions of the Pharmacopœia. This preparation was directed to be made with aromatic sulphuric acid and water either by maceration or percolation by the U. S. Pharmacopœia of 1850[3], since which time, however, the official directions have been to prepare it by percolation. Taylor[4] in 1863 in attempting to prepare a tincture of cinchona that would not precipitate, found that by using six ounces of the bark and one-half ounce of aromatic sulphuric acid in diluted alcohol a preparation was obtained that fully answered the requirements. Braughton[5] in 1870 in India devised a method for the manufacture of a cheap febrifuge from cinchona bark by using successive portions of diluted sulphuric acid to exhaust the bark and then precipitating the alkaloids with caustic

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70 Proc. Am. Pharm. Assoc., 29, p. 421.
71 Am. Jour. Pharm., 58, p. 315.
1 Jour. de Pharm., Aug. 1863.
2 Materia Medica, 13th ed., p. 256.
3 U. S. Pharmacopœia, 1850. p. 154.
4 Proc. Am. Pharm. Assoc., 12, p. 208.
5 Markhains Peruvian Bark, 1870, p. 422.

soda. *Decoctum Chinae acidum*[6] was made official in the Norwegian Pharmacopœia in 1870, diluted sulphuric acid and water being used to exhaust the bark.

Symes[7] in 1874 suggests a formula for a preparation of cinchona containing half an ounce of yellow bark and half an ounce of liquorice root, based on the infusion of cinchona, United States Pharmacopœia. He exhausts this by percolation with a menstruum containing 50 minims of diluted sulphuric acid in eight ounces of water. Brocker[8] in 1877 made decoction of cinchona bark with water and hydrochloric and sulphuric acids respectively. On analysis he found that water does not extract all the alkaloids, hydrochloric acid does, and sulphuric acid extracts somewhat greater amounts of alkaloids than water but less than hydrochloric acid. An acid (sulphuric) decoction of cinchona was official in the Russian Pharmacopœia of 1880.[9]

*Infusum Cinchonae acidum*[10] prepared with 5 percent of aromatic sulphuric acid was official in the British Pharmacopœia of 1885. De Vrij[11] in 1885 states that the alkaloids of cinchona cannot be completely extracted by sulphuric acid. Cripps[12] in 1886 compares the infusion of cinchona of the British Pharmacopœias of 1867 and 1885 and finds that under the same conditions, with the exception of the addition of sulphuric acid, the infusions containing the acid are about 50 percent stronger in alkaloids than the non-acid infusions. Thomson[13] in 1892 while experimenting with the British Pharmacopœial infusion, and decoction of cinchona, and cold infusion of cinchona, finds that while there is considerable loss of alkaloids in all of these preparations, there is less loss when the acid is used as in the infusion, than in the latter two methods. Martindale[14] in 1894 commenting on the infusion of cinchona of the British Pharmacopœia states that it should be dismissed from the Pharmacopœia.

**Gentian.** A writer[15] in the Canadian Pharmaceutical Journal describes a method for extracting gentian by using an aqueous menstruum acidified with sulphuric acid. The finished preparation

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6 Pharm. Norvegica, 2nd ed.
7 Pharm. Jour., 34, p. 741.
8 Tydsch. v. Pharm., 1877. [Proc. Am. Pharm. Assoc., 25, p. 76.]
9 Russian Pharmacopœia, 3 ed.
10 Pharmacopœa Britannica. 1885, p. 206.
11 Drugg. and Chem., Aug. 15, 1885.
12 Pharm. Jour., 46, p. 385.
13 Pharm. Jour., 52, p. 841.
14 Pharm. Jour., 54, p. 823.
15 Can. Pharm. Jour., Aug. 1872, p. 1.

looked well, but was only half as bitter as one prepared with proof spirit.

**Rose.** Infusion of rose made with dilute sulphuric acid is one of the oldest galenicals in use to-day. An infusion[16] similar to the official infusion (British Pharmacopœia) of to-day was in use in 1674. It was official in the London Pharmacopœias of 1720, 1745, 1788, 1809, 1824, 1851, 1867 and in the British Pharmacopœias of 1885 and 1898. Also official in the Edinburgh Pharmacopœia of 1805 and the Dublin Pharmacopœia of 1807. Infusion of rose with sulphuric acid was official in the United States Pharmacopœia of 1820 and in all the succeeding revisions up to and including that of 1870. It is also official in the Portugese Pharmacopœia of 1876 and the Swedish Pharmacopœia of 1888. Wilson[17] in 1887 prepared a concentrated infusion of rose with sulphuric acid by percolation. Henry[18] in 1891 outlines a process for preparing concentrated infusion of rose by digesting the petals with water acidulated with sulphuric acid at 150° to 160° F. until cold, and then percolating.

**Squill.** Rother[19] in 1871 recommends the preparation of fluid extract of squill with sulphuric acid, claiming that an acid is necessary to extract the active principle. In this instance the heat necessary to drive off the acid (?) is detrimental to the preparation. He obviates this difficulty by adding calcium carbonate, thus precipitating calcium sulphate and then filtering.

### Carbonic Acid.

**General.** Sir James Murray[1] in 1870 substitutes a liquid of highly carbonated magnesia and camphor as a general menstruum in place of the ordinary menstruum in extracting vegetable drugs and finds that it produces preparations which are therapeutically active.

### Nitric Acid.

**Cinchona.** J. De Vrij[1] in 1859 claims that nitric acid completely extracts all the alkaloids of cinchona, while it does not dissolve a substance resembling the alkaloids which hydrochloric acid does dissolve and which sometimes causes an error in the estimation of the alkaloids.

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[16] Squires Companion, 16th ed., p. 457.
[17] Pharm. Jour., 47, p. 615.
[18] Pharm. Jour., 51, p. 664.
[19] The Pharmacist, 4, p. ——.
[1] Dub. Med. Press, 1870. [Proc. Am. Pharm. Assoc., 18, p. 72.]
[1] Jour. de Chem. et de Med., April, 1859.

**Lactucarium.** M. Gustin[2] in 1885 proposes making Syrup of Lactucarium by boiling half an ounce of lactucarium in 32 ounces of water and 2 drachms of nitric acid until the nauseous odor of the drug disappears. Sugar and aromatics are then added.

**Stillingia.** J. D. Palmer[3] in 1881 prepares a tincture of stillingia by macerating 8 ounces of drug with 2 pints of diluted alcohol and one-half ounce of nitric acid for 14 days. He advises the addition of a small quantity of the acid to all tinctures made by maceration because of the general solubility of the nitrates.

### Phosphoric Acid.

**Cinchona.** De Vrij[1] in 1885 states that all the alkaloids of cinchona can be extracted by phosphoric acid.

Acid infusion of cinchona made with phosphoric acid is official in the last edition of the Russian Pharmacopœia.[2]

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## Notes on the Plague in China and India.*

By *Joseph Marshall Flint.*

The incubation period in plague varies between three and nine days, but in the majority of cases averages about five or six. It seems that there are no constant prodromata, and the onset, as a rule, is sudden, marked by headache, fever, backache and a general feeling of malaise. Vomiting of a blood-stained fluid has been observed not infrequently at the onset, a phenomenon due to the action of the plague toxin in the mucous membrane of the stomach, which, at autopsy, is nearly always injected and ecchymotic. In Hong-Kong, they were in the habit of speaking of the plague faces, which Lowson believes is often of assistance in the diagnosis of the disease. It consists of a mixture of anxiety, cyanosis and dyspnœa, and in mentioning it Lowson says: "Generally speaking, there is something indescribable in the face of the plague-stricken which seems to help your diagnosis—an expression as if the sufferer himself knew all about it, and his inner consciousness had left its mark upon his features."

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[2] Chem. and Drugg., Aug. 15, 1885.
[3] Am. Jour. Pharm., 53, p. 34.
[1] Chem. and Drugg.. Aug. 15, 1885.
[2] Russian Pharmacopœia, 1891.
* Continued from p. 322.

There is something quite characteristic about the plague tongue, which has a heavier coating than in typhoid fever and is considerably clearer about the margins. Soon the coating turns black and sordes often cover the teeth and lips. After the onset the fever usually rises rapidly and reaches its maximum in from 12 to 24 hours. The common temperature ranges from 103° to 105° F., but cases with a fever as high as 108° are not infrequently observed.

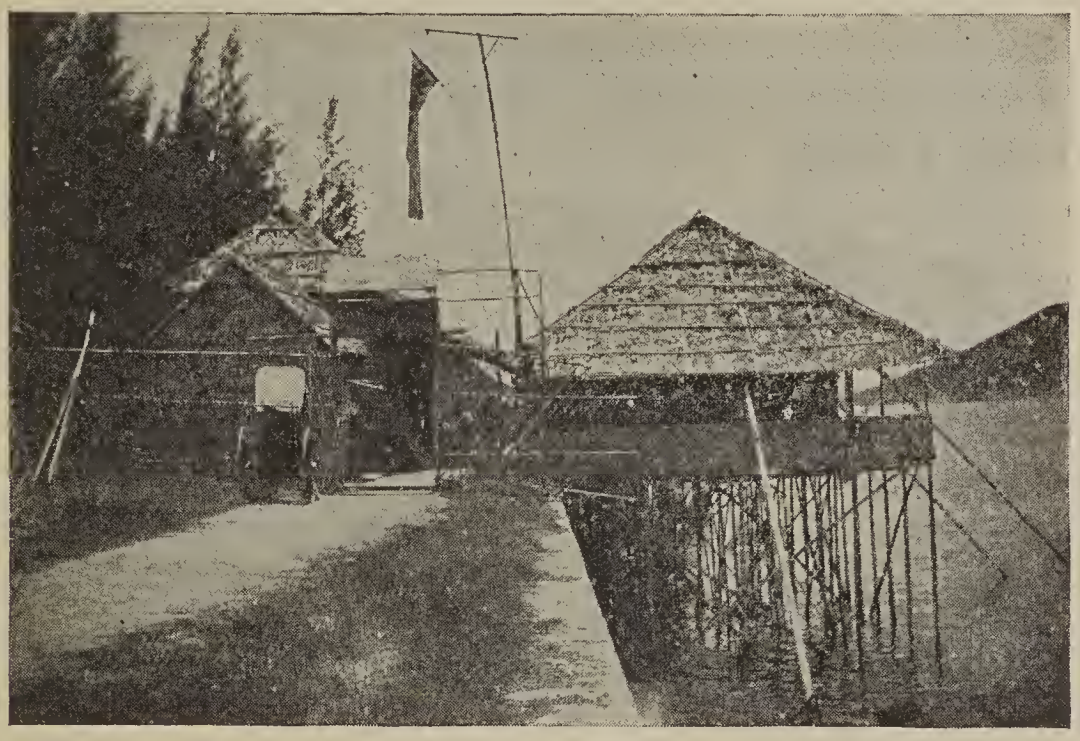
**A row of plague wards in the Kennedytown Hospital.** *

The patient soon after the onset shows evidence of great prostration. The pulse, at first, is full and bounding, and later becomes feeble and collapsed. Dicrotism is very common, and the heart, in the majority of cases, needs repeated stimulation to overcome the cyanosis. The cardiac symptoms observed clinically in plague cases conform in general to the results obtained experimentally by the injection of the toxic nucleoprotein of the pest bacillus into animals. Lustig and Galeotti have also shown† that the subcutaneous injection of large amounts of the plague toxin into animals is followed by a

* Reproduced with permission of the Editor of the Johns Hopkins Bulletin.
† Lustig and Galeotti: Lo Sperimentale, 1898.

local thrombosis at the point of inoculation, and that the blood-pressure in dogs falls rapidly to 10—15 mm. of mercury, accompanied by a progressive diminution in the force and rhythm of the heart-beats soon resulting in death.

On the second or third day, the cerebral symptoms usually appear: these consist of a general apathetic condition on the part of the patient, coma or delirium of varying degrees. During this period it is often difficult to get the patients to take nourishment, and the attendants must resort to strategy or rectal feeding. This was notably the case with Doctor Aoyama, who could only be tricked



**Matsheds at the Kennedytown Hospital, where native treatment is given.**

into taking nourishing draughts by appealing to his politeness, on the one hand, and his patriotism on the other, by alternately toasting Queen Victoria and the Mikado in champagne, milk and other nourishing and stimulating beverages. During this period of the disease symptoms of meningeal involvement and cerebral hemorrhages were sometimes observed.

The respiratory symptoms in most cases consisted of a marked hypostasis owing to the marked cardiac weakness; but when the pneumonic type of plague was present, the condition was more often of a lobular type. In uncomplicated cases the plague bacillus can be found in the sputum, but oftentimes there is present a mixed infection with the pneumococcus. Œdema of the glottis and extensive laryngitis were also found in some of the Bombay cases. During the

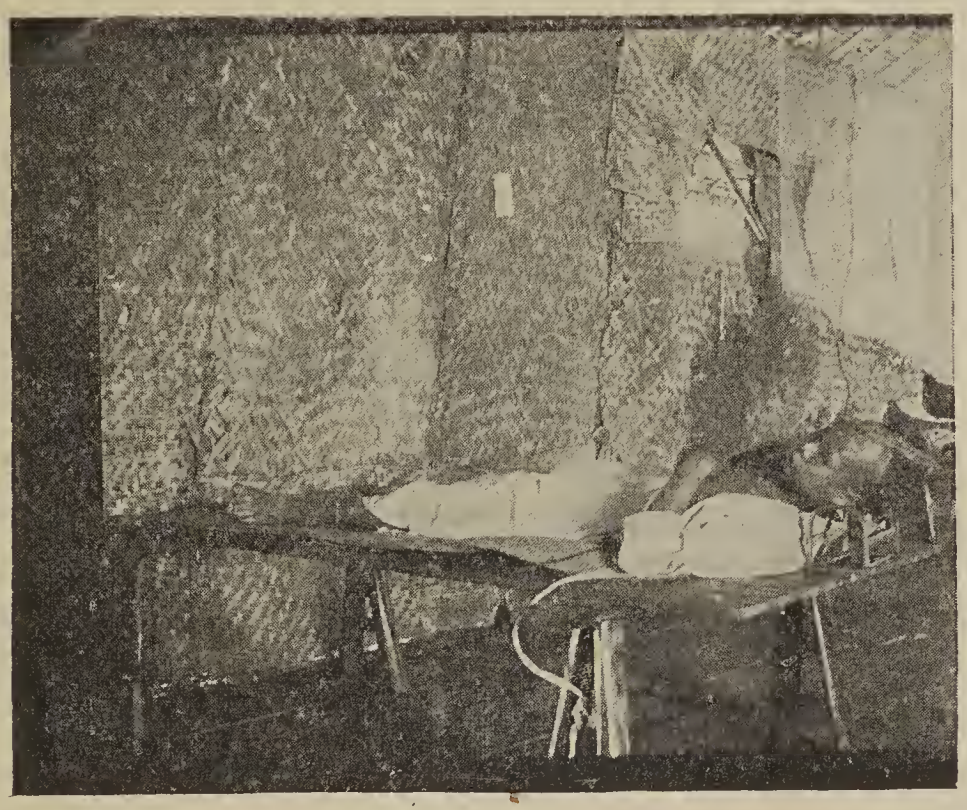
course of the disease, as well as at the onset, vomitting occurs and the vomitus in such cases is stained with both bile and blood. The spleen is palpable and remains so during the course of the disease. There is always some albumin in the urine, but it is small in amount; likewise casts, epithelial débris, and occasionally plague bacilli are also found. In general the disease runs its course in five or six days, but the fever may remain elevated for weeks especially in cases where there is a secondary pyæmic infection. Death in most cases occurs from heart failure. No cases of reinfection above suspicion have been reported, but relapses are not uncommon during convalescence and result usually from local extension from the original focus of the disease.

Between the plague in China and India there are many points of difference which depend, it seems, partly on the character of the natives. In China the pest is more fatal than it is in India, the death-rate among the Chinese being 93 percent, and only about 82 percent among the low-caste Hindus, who are the heaviest sufferers from the disease in India. The general standards of life and personal hygiene are much lower among the Chinese than they are among the Hindus; but for some reason the epidemics are so much greater in India that the terrible effects of the disease are more obvious and its many horrors are impressed on the observer by the magnitude of the sufferings of the natives. Since the first outbreak in India, in 1896—7, the death-rate has constantly increased each year, until, in 1899, more than 50,000 people died of plague in the City of Bombay alone. Moreover, the disease has now spread in a large part of India and has appeared in Bengal, Madras and many points in the Bombay Presidency. The really serious part of the question is that apparently it is still on the increase, and precisely what the end will be no one at present can foretell. The Colonial Government, however, is doing all in its power to stamp out the disease, and no experiment is left untried that offers the slightest hope of solving this very serious question.

The plague measures in India are much like those in Hong-Kong except that they are, perhaps, not quite so thorough. In India the plague authorities have had to fight against the bigotry, opposition and animosity of the native who gives far more trouble to the sanitary authorities than his celestial neighbor. Here exist the ideal conditions for the spread of any disease; namely, overpopulation, over-

crowding, malnutrition, unhealthy environment and crude and unclean methods of living. Under these conditions the energy required to fight the plague in India has been tremendous because of the inertia of the vast population, which even looked with disfavor on the measures meant for its good. In Bombay alone, the plague expenses for the first year of the epidemic amounted to over fifteen lakhs of rupees.

Certain facts concerning the plague epidemics of India have been more fully described in another place;* but the methods of treatment



**Plague patient under restraint in the Hong-Kong Plague Hospital.**

employed in India and the results obtained in their use are of the greatest importance. No effort or expense has been spared by the Indian government to try any method that offers any hope of relieving the distressing conditions. To this end, the Bombay Presidency has fitted up the old government house at Parel as a plague laboratory, and here the plague prophylactic of Haffkine and Lustig's Heilserum are manufactured. Yersin, it appears, was the first to manufacture a serum supposed to act as an antitoxin to the poisons produced by the plague bacillus. Like the diphtheria antitoxin it was made on the assumption that the plague toxins were soluble products of the growth of the pest bacillus and could be obtained

* Barker and Flint: "A Visit to the Plague Districts of India." New York Medical Journal, Feb. 1900.

from filtered fluid cultures of the organism. The first cases treated by the antitoxin were in China, and the results, it is stated, were very satisfactory. Somewhat later several plague patients at the Arthur Roads Hospital in Bombay were inoculated with the antitoxin, but the results were practically negative; so, from lack of both results and material, further experiments with Yersin's serum were not undertaken. In the Oporto epidemic, Calmette* used Yersin's serum and reports excellent results with it. Two facts, however, should be noted, i. e., that the number of cases treated in India was too small to allow any conclusions as to the real value of the antitoxin as a therapeutic agent to be drawn, and, on the other hand, that the cases occurring in Portugal were by no means as severe or fatal as those among the natives of Bombay.

(To be continued.)

# MONTHLY REVIEW.

## Chemistry.

**On the Relation of the Reducing Power of Normal Urine to the amount of Certain Nitrogen Compounds Present.**—It was formerly supposed that the reducing power of urine depended solely upon dextrose or some similar body contained in urine, and estimates of sugars in urine were based upon the reduction of Fehling's solution. It is now well known that other constituents of urine act as reducing agents, thus Riegler bases a method for the estimation of uric acid upon its reducing effect on Fehling's solution.

John H. Long has now studied critically the reduction of copper solutions by normal constituents of urine. A mean of 23 specimens of urine gives the total reducing power of 1,000 cc. of urine equal to 6.204 gm. CuO. Of this 0.935 gm. CuO has been reduced by the uric acid of the urine and 1.961 gm. CuO by the creatinin, hence 46.6 per cent. of the total reduction is to be ascribed to uric acid and creatinin.

[J. Am. Chem. Soc., 22, p. 309.] *W. A. P.*

**A Method for the Determination of Zinc by the use of Standard Thiosulphate Solution.**—R. K. Meade estimates zinc volumetrically by a method practically identical with that devised by him for a volumetric estimation of magnesium (J. Am. Chem. Soc., 21, p. 746) depending upon the precipitation of ammonium arsenate, and the determination of the arsenic in this precipitate by digestion with potassium iodide in strongly acid solution, and titration of the liberated iodine with standard thiosul-

* Calmette: Presse Médicale, 1899.

phate. Since zinc is usually determined as zinc pyrophosphate by precipitation as zinc ammonium phosphate and subsequent ignition, and it seemed propable that here too the analogy between phosphates and arsenates would hold good, and that zinc also could be precipitated as zinc ammonium arsenate and the arsenic estimated as in the magnesium method. The following method was tried and gave good results: 0.249 gm. zinc oxide, equivalent to 0.2000 gm. zinc, was dissolved in dilute hydrochloric acid, an excess of ammonia added, and then 50 cc. solution sodium arsenate (10 per cent.) added. The solution upon dilution to 750 cc. was warmed, nitric acid added until slightly turbid and then acetic acid, 1 cc. at a time, until the solution was acid to test paper. The hot liquid was then stirred until the precipitate became heavy and granular, then taken from the fire and allowed to subside. It was then filtered off, washed and transferred to a beaker. The paper and the beaker in which the precipitation was made washed with dilute hydrochloric acid, and the total volume brought to 85—100 cc. with the same acid. 2—3 gm. potassium iodide were now added, and after standing in the cold a few minutes, the liberated iodine titrated in the usual way. 1 cc. decinormal sodium thiosulphate corresponds to 0.00327 gm. zinc. Since calcium and magnesium are precipitated from alkaline solutions by sodium arsenate, while zinc is thrown out in an acid solution, the former may be removed while the solution is strongly ammoniacal.

[J. Am. Chem. Soc., 22, p. 353.] *W. A. P.*

**Contributions to the Analytical Chemistry of the Alkaloids. I. The volumetric Estimation of Alkaloids by Neutralization.**—C. Kippenberger has studied the volumetric estimation of the alkaloids strychnine, brucine, atropine, morphine, aconitine, veratrine, thebaine, codeine, emetine, cocaine, nicotine, coniine, sparteine, quinine, pelletierine, papaverine, narcotine, narceine and caffeine by titration with acid when the following indicators are used: iodoeosin, methyl-orange, ethyl-orange, azolithmin, uranin, hæmatoxylin, phenolphtalein, cochineal, lackmoid, alkannin and congo-red. In each case a given weight of pure alkaloid was dissolved in 100 cc. of decinormal sulphuric acid, this being a decided excess, and the volume brought to 1000 cc.

Of this solution portions of 50 cc. each were measured out, the indicator added and the excess of acid determined with fiftieth normal sodium hydroxide. The results are given in tabular form and show wide variations, depending upon the indicator used. The author then discusses the theories explaining this variable behavior of alkaloids with different indicators and takes the ground that the electrolytic dissociation theory is insufficient and that the effect of hydrolysis and of dissociation of alkaloidal salt into alkaloid and acid without formation of H and OH ions, must be taken into account. In certain cases where a large excess of acid was required he demonstrated that the indicator combined with the alkaloid, as for instance quinine and methyl-orange.

To obtain quantitative results when estimating alkaloids by titration with acid and alkali solution, the following conditions must prevail:

a) The degree of dissociation of the alkaloidal salt in aqueous solution should be small. Sulphates best answer this requirement.

b) The indicator-alkaloid molecule should have a small dissociation factor, which will be the case when either

1) the alkaloid is a strong base and the indicator a weak, or at most a medium strong acid, or

2) the alkaloid is but a medium strong base, but in its basic property shows a combining tendency approximately equal to that of the acid indicator.

In the table below the indicator best adapted to the given alkaloid is given spaced, those enclosed in brackets are not satisfactory yet give fairly reliable results.

Atropine: Iodoeosin, [methylorange[1]], azolithmin, haematoxylin, lackmoid, cochineal, uranin.

Morphine: [Iodoeosin], cochineal, lackmoid.

Aconitine: Iodoeosin, azolithmin, haematoxylin, cochineal.

Veratrine: Iodoeosin, haematoxylin, cochineal, lackmoid.

Thebaine: Iodoeosin, uranin, [hæmatoxylin], cochineal, lackmoid[1].

Codeine: Iodoeosin, [azolithmin], uranin, haematoxylin, cochineal, lackmoid.

Emetine: Iodoeosin, [azolithmin[2]], [uranin[1]], [haematoxylin[1]], cochineal, [lackmoid[2].]

Cocaine: Lackmoid, uranin, cochineal, haematoxylin.

Strychnine: Iodoeosin, azolithmin, [uranin], haematoxylin, cochineal, [lackmoid.]

Brucine: Iodoeosin azolithmin, [uranin], haematoxylin, cochineal, [lackmoid.]

Nicotine: [Iodoeosin], [uranin[1]], [cochineal], lackmoid.

Coniine: Iodoeosin, [methylorange], uranin, [azolithmin[3]], haematoxylin[3], cochineal, lackmoid, congo-red.

Sparteine: Azolithmin, [uranin], haematoxylin, phenolphtalein, alkanin.

Quinine: Azolithmin, uranin, haematoxylin[3], lackmoid[4].

Pelletierin: [Iodoeosin], uranin, cochineal, [lackmoid[2]], azolithmin[2].

Papaverine: Lackmoid.

Narcotine: [Methylorange], lackmoid.

Narceine: ——.

Caffeine: ——.

[Ztschft. anal. Chem., 39, p. 201.] *W. A. P.*

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[1] Change in color not decided enough.
[2] Color becomes doubtful.
[3] Color change momentarily distinct and readily observed, soon changes.
[4] Precipitation takes place: if ether is added, as with iodoeosin, the liquid becomes clear and fairly good results are obtained.

**Contributions to the Analytical Chemistry of Alkaloids.—II. Extraction of Alkaloidal Salts from Aqueous Solution with Immiscible Solvents.**

The explanation usually given for the extraction of alkaloids by immiscible solvents is that from acid solution the alkaloid can not be removed by chloroform, ether etc., because the alkaloid salt is insoluble in these liquids, that, when the solution is rendered alkaline, the base is set free and this, being soluble in chloroform, etc., leaves the aqueous portion and can be removed in its chloroformic, etc., solution. Few exceptions are given to this general statement (colchicine, caffeine) and no mention is made whether they pass over to the chloroform as salt or free alkaloid. In a previous communication* C. Kippenberger demonstrated that some alkaloidal salt when in aqueous solution would partially dissociate into base and acid and hence would pass into the liquid used for extraction as free base—possibly also in the form of unchanged alkaloid-salt. He has now studied more critically the extraction of alkaloids from the acid solutions by chloroform and also by ether. Comparatively dilute solutions of alkaloid, rendered strongly acid with hydrochloric sulphuric, tartaric or oxalic acid, were extracted by shaking with chloroform or ether. In some case the acid solution of alkaloid was saturated with sodium chloride before extraction since it was judged that strong salt solutions would affect the dissociation of the alkaloidal salt. To determine the relation of free base and salt, the volatile solvent was drawn off, allowed to evaporate, the residue weighed and its alkalinity then determined. From the alkalinity the weight of free alkaloid extracted was calculated and this weight deducted from the total residue gave the amount of alkaloid salt removed in the process. It having recently been shown that alkali hydroxide and also ammonia decompose chloroform with formation of chlorides, the author made some experiment to ascertain whether a similar reaction would take place between alkaloids and chloroform and thus affect his results. He concludes that only with sparteine minute traces of HCl formed: if, however, the solution of alkaloid in chloroform is shaken with water and now the chloroform evaporated, then the water may contain considerable HCl.

His results, shown in a series of tables which can not well be abstracted, demonstrate definitely that some alkaloids dissociate into alkaloid and acid, to a considerable extent even in strongly acid solutions. When the solutions were acidified with hydrochloric acid, more alkaloid passed to the chloroform, than when sulphuric acid was used, and increase of either acid would also decrease the degree of dissociation, thus: from a solution of aconitine 0.200 gm., hydrochloric acid (21.9 percent) 0.4 cc., in water 70 cc., and shaken with chloroform 50 cc., there were extracted 0.0813 aconitine hydrochloride and 0.0158 gm. aconitine. When the hydrochloric acid was replaced

* Zeitschr. f. anal. Chem., 39, p. 201; Pharm. Rev., 18, p. 373.

by, respectively, 0.2 cc., 1 cc. and 3 cc. sulphuric acid (40.1 percent), the same treatment removed, 0.0062 gm., 0.0031 gm. and a mere trace of aconitine.

Ether removes alkaloids from their acid solution to a much smaller extent, and when working in sulphuric acid solution caffeine is the only one extracted in any considerable amounts. It is further shown that in cases where chloroform extracted considerable amount of alkaloid from acid solution, that a complete removal of alkaloid was difficult or impossible to attain. Addition of some soluble and but slightly hydrolized salt may, however, so decrease the solvent effect of the water that a separation may occur, thus, while chloroform extracted from a solution of 0.2 gm. aconitine acidified with 0.2 cc. sulphuric acid, only 0.0062 gm. aconitine in form of free base, when such solution was saturated with sodium chloride, a single extraction with chloroform removed from the solution the entire quantity of alkaloid, and chiefly in the form of sulphate.

Based upon these results some alterations of his former scheme for the separation of alkaloids by solvents are discussed.

In view of the results obtained when salt was added to solutions of alkaloid, he studied its effect upon the extraction of morphine from alkaline solutions. Kippenberger previously proposed to remove morphine from solutions by rendering alkaline with sodium hydroxide, then adding an excess of sodium bicarbonate and now extracting with chloroform containing one-tenth its volume of alcohol. From some experiments he concludes that here, too, the addition of salts aids the extraction of the alkaloid.

[Zeitschr. f. anal. Chem., 39, p. 291.] *W. A. P.*

**The Assay of Strophantus Seed.**—A. R. L. Dohme assays strophantus seed by the methods of Elborne, Fraser and of Barclay and discusses the cause of the variable results obtained. He is inclined to place most confidence in Barclay's process, which is carried out as follows: The drug is extracted with alcohol and the latter removed by distillation. The residue is treated with water and the aqueous mixture extracted with chloroform to remove fat and oil. The aqueous portion containing the glucoside strophantin is acidified with sulphuric acid and heated for an hour on a water bath, whereby strophantin is decomposed into strophantidin and sugar. The resulting cloudy solution is extracted with chloroform, the chloroformic solution evaporated carefully. The residue of strophantidin remaining behind is dried at about 65° C. and weighed. This weight multiplied by 2.74 gives the weight of strophantin in the drug. While Dohme believes that a more nearly correct method can be devised, he also believes that the drug can be assayed with existing methods with ample accuracy for all therapeutic purposes. [Drug. Circ., 44, p. 132.] *W. A. P.*

**The Products of the Aconite Assay.**—Referring to his recent paper relative to the assay of aconite* A. R. L. Dohme remarks that to place the reliability and trustworthiness of the assay beyond question of doubt, it remained to demonstrate that the product of the assay was aconitine and not any of its decomposition products. Accordingly Dohme worked up 500 gm. of drug according to the assay method, dissolved the alkaloidal residue in ether and allowed the ether to evaporate slowly. Good crops of white crystals were obtained and since these possessed the melting point accepted for aconitine he considers the reliability of the assay method as proven. [Drug. Circ., 44, p. 132.] *W. A. P.*

**Notes on Chloride of Gold and Sodium.**—Lyman F. Kebler has determined the gold in five samples of chloride of gold and sodium. Instead of 30 percent, as required by the U. S. P., he finds 23.55, 27.22, 25.00, 28.31 and 30.3 percent. [Am. Jour. Pharm., 72, p. 325.] *W. A. P.*

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## Botany and Pharmacognosy.

**Usunify, a New Edible Tuber from Soudan.**—The tubers of *Plectranthus Coppini, Labiateæ*, are found in the markets of Soudan and as a food are highly esteemed by Europeans. They are black in color, very mealy and similar to a potato in taste. They are elliptical with somewhat rounded ends, and show no wrinkles. The plants endure a tropical climate, hence as food producers may attain considerable significance in hot countries where the potato will not thrive.

[Apoth. Zeit. 15, p. 431; from Bull. Commerc.] *R. H. D.*

**A New Variety of Mentha Piperita.**—Under this title P. J. Agnelli describes a sort of peppermint, which he has grown and improved for a number of years, and for which he claims many advantages over the ordinary *Mentha piperita*. The plants of ordinary *Mentha piperita* steadily degenerate and each year the grower is obliged to set out new plants. It is claimed for the new sort that such degeneration does not take place, also that it grows more rapidly than the ordinary sort, that its leaves are much larger and that it has a very peculiar, powerful yet fine, odor which readily distinguishes it from the ordinary. It will live either in heavy soil or in quicksand, but thrives best in moist black sandy soil. Mr. Agnelli's address is Csari (near Sassin), Hungary. He has the young plants for sale and has already introduced them into Germany, France, England, Russia and Italy. In Germany this mint is known as Agnelli's Improved Peppermint.

[Pharm. Post, 33, p. 253.] *R. H. D.*

**Butea Kino.**—D. Hooper gives an account of the collection and properties of Butea Kino. The astringent exudation comes principally from

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* Drug. Circ., 44, p. 69; Pharm. Rev., 18, p. 269 ff.

*Butea frondosa* Roxb., but also from other *Butea* species. The red juice issues from natural fissures and wounds made in the bark during the hot season, which hardens into a ruby-colored brittle gum. A specimen of this kino, purified by solution in water to separate impurities, contained in 100 parts, 73.26 parts of tannin, 5.05 parts of difficultly soluble extractive, and 21.67 parts of gum, with gallic acid and other soluble substances. The fact that its properties became altered on exposure for any length of time to air, light and moisture, considerably diminished its value. Butea kino is not collected by any systematic tapping of the trees, and the juice is thinner than that of *Pterocarpus*, so that it spreads itself over the bark and dries in little tears, instead of exuding from a wound and drying in large masses. Besides the bark of the tree, stones, dirt and foreign seeds are invariably found in the commercial gum. Since the kino from the present official source is of such a high standard, and sufficiently abundant it would seem unnecessary to include the butea species in the Pharmacopœia. It is usually very impure in its crude state and is cleaned only with difficulty. Besides this, it is inferior in its soluble properties, and undergoes rapid changes from a soluble to an insoluble condition which would render it objectionable for preparing tinctures. [Pharm. Jour., 64, p. 664.] *R. H. D.*

**Some Vegetable Drugs.—Fructus Prosopis strombuliferae.** From *Prosopis strombulifera Benth.*, a leguminosa-mimosea growing in Argentine. Indigenous names: *Retortuna, Mastuerzo, Mastorcido, Pata de Gallo.*

The mother plant of this drug belongs, according to Th. Stuckert, to a separate group of the genus *Prosopis strombucarpa*, and was originally described by d'Orbigny as *Spirolobium australe.* The fruits of the mastuerzo plants have astringent properties and are employed in the form of an aqueous infusion both as an internal and external remedy for diarrhoea and gonorrhoea, but they are also said to possess abortive properties.

**Herba et Fructus Blepharis capensis.** From *Blepharis capensis Pers.*, an acanthacea growing in South Africa, where it is known among the Kaffirs as *ubu-Hlungu besigcawu.*

The Blepharis plant is valued by South-African[1] colonists as a remedy for blood-poisoning caused by the consumption of the meat of animals affected with anthrax. It is also used as an antidote for the bite of poisonous snakes, such as the puff-adder or *Clotho* (*Viper*) *arietans*, and of tarantulas, and also as a remedy for toothache. For treating bites the powdered drug is stirred into a paste and placed upon the wound and at the same time a little of a decoction of the substance is taken internally. Infections of anthrax are treated by means of a decoction of 6.0 per 600.0 cc (1 p.:100 p.) of water, which is taken in daily doses of 6 to 8 table-spoonfuls. The administration

[1] A. Smith, A Contribution to the South African Materia Medica, Cape Town 1895, pp. 35, 48, 55, 213.

of blepharis is always watched carefully, as the drug is said to have a very heroic action. It has also ascribed to it powerfully antiseptic properties, which accounts for its recommendation in toothache. In this case a paste prepared from the powdered leaves or root is applied directly to the painful spot or a tincture of these parts of the plant is applied with the brush to the tooth.

**Natri.** *Natri* is the medicinal name of three species of *Solanum* growing in Chili, viz.: *Solanum crispum*, *Solanum gayanum* and *Solanum tomatillo*. It is in particular the drug obtained from the last named plant which is extensively used in Chili owing to its salutary power in ague. The active principle of natri is by Murillo and others[2] described as a new alkaloid named natrine or witheringine; according to F. Ramdohr and F. W. Neger,[3] it is, however, solanine, and the latter believe that its unusual richness in solanine (1 p. c.) renders the natri plant eminently adapted for the extraction of solanine. From postal communications received from Dr. Burmeister, of Concepcion, the alkaloid of the natri plant does not, however, appear by any means to be identical with solanine. The active principle of the natri plant is according to Burmeister localized in the wood, leaves and stems, and appears to be freely soluble in water since it can be extracted both by maceration for a short time and infusion in water. It appears, however, to decompose as easily as it dissolves in water, for the infusions and decoctions rapidly lose their efficacy by standing for a few days, and their active properties are rapidly destroyed by mineral acids. The drug acts more energetically in the fresh than in its dried state, the wood losing less by desiccation than the leaves and stems. The aqueous extracts, infusions and decoctions of natri (1:10) have a very bitter taste, they stimulate the appetite and lower the temperature of the body both by internal and clysmatic application. Burmeister has experimentally ascertained the effect of natri upon the temperature of the human and animal body. Doses of 10 grm. *per annum aetatis* of the fresh drug administered as an infusion or enema cause in human beings generally a fall of temperature of 1° C. The pulse seems at the same time too slow, but this result is as yet not quite firmly established. Respiration is apparently not affected thereby. There was no visible action upon the pupil. The pronounced antipyretic properties of natri and its cheapness have induced Chilian doctors to warmly recommend this drug as a substitute for quinine in ague which appears all the more justifiable since the natri plant is free from all injurious secondary properties.

**Radix Tachiae guyanensis.** (Caferana.) This drug has been mentioned in Merck's Report ten years ago and has since been examined more carefully by Th. Peckoldt,[4] who has demonstrated it in the presence of an organic

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[2] Plantes médicinales du Chili, Paris 1889, p. 145.
[3] Pharm. Centralhalle, 29, p. 521.
[4] Ber. d. d. pharm. Gesell., 1899, p. 227.

crystallized product, the caferanine, and an amorphous bitter substance called taquinine. It remains still doubtful as to which of these bodies should be regarded as the vehicle of the antipyretic properties of this drug. The whole of the root is at present used for medicinal purposes, the tincture (1:5), an alcoholic extract and a decoction (10:500) being officinal in Brazil. Dr. Peckoldt jr. ensured excellent results in the treatment of children, especially through the use of the tincture, which he prescribed in ague after the following formula:

Rp.: Tincturae Caferanae 1—1.5
Syrupi Coffeae tostae 60.0
To be taken in tea-spoonfuls.

**Semen Bonduc.** The seeds of bonduc are derived from two plants belonging to the group of the *Leguminosæ-Caesalpiniaceæ*, viz.: *Guilandina bonducella* (grey bonduc) and *Caesalpinia bonducella* (yellow bonduc). Both plants are indigenous to the coasts of tropical Asia, Africa and South America. Their seeds enjoy in India the reputation of being a febrifuge of the first order and are therefore known by the name of "Quinine of the poor." From the studies of E. Heckel and Fr. Schlagdenhauffen[4] the physiologically active component of both seeds appears to be the same bitter substance which the investigators have named bonducin. The bonduc seeds are used both as antiperiodics for ague and as a general tonic like quinine, the following prescription being followed:

Rp.: Seminum Bonduc pulv.
Pulveris Piperis nigræ â 30.0
Divide into 30 equal doses.
½ to 1 powder to be taken three times daily.

As regards bonducin, the active component of the bonduc seeds, it appears from the experiments of Isnard[5] that administered in doses of 0.1—0.2 grm. in the form of pills it checks attacks of ague as rapidly as we are accustomed to see in the case of quinine.

[Merck's Annual Report, 1899, p. 144.] *R. H. D.*

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# Literary.

## Books and Pamphlets Received.

American Pharmaceutical Association. An epitome of the National Formulary of unofficial preparations compiled by C. L. Diehl under the direction of the Council of the American Pharmaceutical Association. First edition. pp. 48. 1900.

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[4] Nouveaux remèdes, 1886, p. 122 etc.
[5] Nouveaux remèdes, 1862, p. 365.

Baillière et Fils—Paris. Nouveau formulaire magistral précéde d'une notice sur les hôpitaux de Paris, de generalities sur l'art de formuler; suivi d'un précis sur les eaux minérales naturelles et artificielles, d'un mémorial thérapeutique, de notions sur l'emploi des contrepoisons, sur les secours a donner aux empoisonnes et aux asphyxies, et d'un précis d'hygiène thérapeutique etc. Par A. Bouchardat et G. Bouchardat. Trente-deuxième edition collationnée avec le nouveau codex revue et augmentée de formules nouvelles et de la liste des mets permis aux glycosuriques. pp. 692. Paris 1900.

Verlag von A. Hartleben—Wien. Technologisches Lexikon. Handbuch für alle Industrien und Gewerbe. Unter Mitwirkung von Fachgenossen redigirt von Louis Edgar Andes. 1. Lieferung, pp. 48. 1900.

Verlag von Julius Springer—Berlin. Hilfsbuch für Nahrungsmittelchemiker zum Gebrauche im Laboratorium. Von Dr. A. Bujard und Dr. E. Baier. Zweite umgearbeitete Auflage. Ein Bd., 609 Seiten. 1900. Preis geb. $3.30.

Author—Revision of the U. S. P. by John M. Francis. A comprehensive and detailed criticism of many pharmacopœial requirements and tests based upon five thousand examinations made during 1899. Reprinted from the Bulletin of Pharmacy. Pamplet, pp. 33. 1900.

Author—Detroit. What bearing has higher professional education on the work and welfare of the manufacturing pharmacist? By Joseph Helfmann. Reprinted from the Philadelphia Medical Journal. Pamphlet, pp. 8. 1900.

**Reviews.**

Die mikrosckopische Analyse der Drogenpulver. Ein Atlas für Apotheker, Drogisten und Studirende der Pharmacie von Dr. Ludwig Koch, a. o. Professor der Botanik an der Universität Heidelberg. Erster Band: Die Rinden und Hölzer. 1. Lieferung. Verlag von G. Borntraeger, Berlin. 1900. M. 3.50.

For two principal reasons the pharmacist purchases his crude vegetable drugs in powder form instead of grinding them himself, as was once the case. Firstly, it is more convenient and secondly, as far as the fineness of powder is concerned, a more uniform product is obtained than the pharmacist can produce with the apparatus generally at hand. These advantages are more than offset by the complete annihilation of those external features which reveal identity,

and oftentimes quality, for which the pharmacist is responsible. If by rigid enforcement of the law the pharmacist were compelled to live up to these responsibilities, it would be safer, simpler, and more convenient for him to grind his own drugs. But such is not the case and it is therefore necessary that the conscientious pharmacist may have some means to fortify himself against fraud and deception for the practice of which there are abundant opportunities.

Very fortunately most of the vegetable drugs that are found in the drug store possess anatomical elements so characteristic that their identity is not lost even when the drug is ground to a very fine powder. Microscopical analysis is the desired means, therefore, and it is becoming of greater importance every day to the pharmacist who has been compelled to rely almost entirely upon the integrity of the manufacturer or dealer who supplies him with powdered drugs.

Among the several books now existing which bear upon this subject none are as useful as the above work seems destined to be and yet its plan is not one that will appeal to the greatest number, unless the closing installments shall contain a resumé in the form of an analytical key to all the drugs treated in the whole work.

The work is to appear in two volumes, the size of which and the time of completion are perhaps not known even by the author. It is to appear in installments at no stated intervals. The first installment or "Lieferung" of 75 pages is divided into two parts. In the first are discussed in minute detail and great accuracy the sampling of the powder, the making of mounts, the advantages and disadvantages of water, glycerine and chloral hydrate as mounting media, and the use of iodine solution, alcohol and potassium hydrate solution as reagents. A very carefully prepared section on the microscopical examination of the mount itself, pointing out all the little difficulties which are likely to be met with and the niceties of manipulation, is given, with lucid statements of means and methods to obviate and remedy the difficulties encountered.

The second part reviews the different anatomical elements that may be found in barks and describes in their order, from various points of view, bast, stone cells, suberous tissue, phelloderm, collenchyma, parenchyma, crystal pockets and cells, secretion cells, medullary rays, cell fragments, crystals and starch. This is followed by the analytical keys to the drugs *Cortex Aurantii Fructus*, *Cortex Cascarillae* and *Cortex Cinchonae succirubrae*.

Between five and six pages are devoted to the text for each of the three drugs mentioned. The general plan of attack is the same for each drug and is analytical in character. Some will maintain that the text is unnecessarily detailed and long drawn out since it considers with equal thoroughness the unimportant elements. Were it not that a smaller key is also given, which in many cases will render as good or even better service in mere identification than the long one, the objection would be well taken. The greatest objection to the plan lies in the fact that there are as many keys as drugs considered which implies at the outset that the drug is known. An analytical key must be a device by which the unknown may be identified. It is hoped that the author will make these individual keys the basis of one large comprehensive key that will be to powdered vegetable drugs what qualitative analysis is to inorganic chemicals.

Each drug considered is accompanied in the back of the book by a full paged, beautifully executed plate of drawings illustrating the text and frequently referred to by letter and figure. Being drawn with a camera, all parts are represented in their true relation with respect to size.

There are no drawings of sections made with the razor, the aim being to represent every kind of fragment in the powder of given fineness, found in the field of the microscope, no matter how small or insignificant. It seems as if the author has carried this to an extreme which is, from a practical standpoint, unnecessary to the identification of the powder. The danger of this extended treatment lies in the fact that students and pharmacists will place a too lit ral meaning upon them, a danger which the author wisely cautions against.

The work promises much for the pharmacist, student in pharmacy and the food and drug expert, and will be by far the most complete exposition of the study of drug powders extant. As a reference work it will render invaluable service and as a laboratory guide to the introductory study of powdered drugs it will be indispensible. No German reading pharmacist who is at all interested in pure and genuine powdered drugs can afford to be without it, while all pharmacists, whatever their nationality, can make intelligent use of the plates.

Although the number of installments is not fixed by the author, the completed work of two volumes will assume considerable proportions if the remaining drugs are as fully treated as the three spoken of.

Paper, type and plates are of the best. *J. O. Schlotterbeck.*

HILFSBUCH FÜR NAHRUNGSMITTELCHEMIKER zum Gebrauch im Laboratorium für die Arbeiten der Nahrungsmittelkontrolle, gerichtlichen Chemie und anderen Zweige der öffentlichen Chemie. Von Dr. A. Bujard und Dr. E. Baier. Mit in den Text gedruckten Abbildungen. Zweite umgearbeitete Auflage. Ein Band, 609 S. Verlag von Julius Springer in Berlin. Geb. $3.25. 1900.

Since the examination and estimation of foods and of articles used in their preparation has become an important branch of applied chemical, microscopical and bacteriological research, the number of treatises treating this branch of application is steadily increasing. Among the more comprehensive compends this one, first published in 1894, has met with special approval and appreciation, being a specific and detailed guide for practical work.

The second edition of the book has been largely rewritten and greatly extended in accordance with the progress of analytical and bacteriological methods. The number of useful and reliable tables serving to save tedious calculations has also been increased. The book will continue in its new and completed edition to serve as a useful and ready guide and reference compend to the public analyst in food and forensic examinations. *Fr. H.*

MIKROCHEMISCHE TECHNIK. Von H. Behrens, Professor an der polytechnischen Schule in Delft. Verlag von Leopold Voss, Hamburg und Leipzig. 1900. Pp. VII + 68. Preis Mk. 2.00.

This is a further installment of Professor Behrens' work on microchemical analysis. This pamphlet, as its title indicates, is devoted to microchemical technique. Methods of preparing permanent specimens of various typical compounds to serve as a means of comparison in detection and identification are described in detail. The subject matter is presented under eight different headings, viz.: Utensils for preparing permanent preparations; Colored preparations; Sublimates; Crystallizations; Precipitates; Washing and drying of precipitates; Mounting of preparations; Metallic preparations.

The importance of microscopical analysis in chemistry is so evident that it needs no further comment. This treatise on microchemical technique supplements the author's previous excellent work, and it is to be hoped that it will aid materially in inducing the chemist to use the microscope more frequently.

*Louis Kahlenberg.*

# SUPPLEMENT.

## Societies.

### Sta e Pharmaceutical Associations.

**Alabama.** The nineteenth annual meeting was held at Mobile, May 15 and 16.

The principal officers elected for next year are: President—G. B. McVay of Birmingham; Secretary—L. S. Brigham of Montgomery; Treasurer—E. E. Elam of Anniston; Local Secretary—J. D. Burke of Montgomery, the place of the next meeting.

**Arkansas.** At the meeting held at Little Rock, June 11—13, twenty-six new members were elected. Papers were read by J. H. Chestnutt of Hot Springs, and by W. W. Kerr and J. W. Beidelmann, both of Little Rock.

The principal officers for next year are: President—E. F. Klein of Hot Springs; Secretary—J. A. Ginocchin of Little Rock; Treasurer—J. A. Jungkind of Little Rock.

The next meeting will be held at Little Rock, May 21, 1901.

**Colorado.** About seventy members attended the annual meeting held at Manitou, July 13 and 14.

The officers for the ensuing year are: President—C. E. Barnes of Denver; Secretary—C. E. Ward of Denver; Treasurer—J. F. Fezer of Greeley; Local Secretary—F. B. Fox of Manitou, where the next meeting will be held June 18—20 of next year.

**Connecticut.** The annual meeting was held at Hartford June 12 and 13. The Association has a membership of 290 and 21 new members were elected. The Treasurer reported a balance of $466.33. Only one paper is reported as having been read, viz. by J. K. Williams.

C. K. Williams of Hartford read several papers on the making of stock preparations by the druggist, and on the preparation of syrups for the soda fountain etc.

The principal officers elected are: President—C. S. Finch of Stamford; Secretary—Chas. A. Rapelye of Hartford; Treasurer—J. B. Ebbs of Waterbury. The next annual meeting will be held in June 1901, the exact date and place of meeting to be decided by the Ex. Com.

**Delaware.** The fourteenth annual meeting was held at Wilmington, June 7. The society has a membership of 78, and 8 new members were elected. The Treasurer's report shows a small balance. The meeting was brief. Addresses were made by Prof. Moerck on The advantages of college training for druggists; and Dr. Miller on The poetry of botany. The principal officers elected are: President—W. A. Jester of Delaware City; Secretary—F. W. Fenn of Wilmington; Treasurer—J. P. Williams of Wilmington.

**Georgia.** The twenty-fifth annual meeting was held at Savannah, May 22 and 23. Forty new members were elected. The principal officers for next year are: President -M. H. Taylor of Macon; Secretary—C. T. King of Macon; Treasurer—J. T. Shuptrine of Savannah. The next annual meeting is to be held at Atlanta in May 1901, the exact date to be fixed by the Ex. Com.

**Indiana.** About one hundred members attended the 19. annual meeting held at South Bend, June 13—15, eighty-seven new members being elected.

Papers were read by the following persons:

L. Eliel—South Bend: Drug store apprentices.

——Benefits of organization.

F. R. Eldred—Ligonier: Practical points about bacteria.

J. W. Sturmer—Lafayette: How to make certain medicines palatable.

C. C. Dean — Bluffton: Practical points on advertising.

P. E. Otto—Columbus: Ipecac; its assay methods compared.

I. V. S. Stanislaus: Some data on how the pharmacist can save money by being his own manufacturer.

E. A. Geyer—South Bend: Business methods.

W. O. Gross—Fort Wayne: Peppermint cultivation.

T. F. Massey—New Carlisle: Relation that should exist between the doctor and the druggist.

Twenty-one local associations were organized during the past year. Although the treasurer reported a balance of $357.53, the annual dues were raised from $1 to $2 in order to relieve the strained condition of the treasury, a number of bills, including the N. A. R. D. dues, not being paid.

The principal officers elected are: President — F. W. Meissner, La Porte; Secretary—A. Timberlake, Indianapolis; Treasurer—F. A. Carter, Indianapolis; Local Secretary —D. E. Silverberg of Muncie, where the next annual meeting will be held.

The entertainment included visits to plants of various manufacturing industries located at South Bend and to Notre Dame University.

**Iowa.** The State Association met July 10—12 at Clear Lake. The next meeting will be held at Storm Lake.

**Kansas.** The twenty-first annual meeting was held in Hutchinson, May 22—24. Thirty-two new members were elected, making a total of 218 in good standing.

Officers for the following year: President—H. W. Mehl of Leavenworth; Secretary—E. E. Lair of Topeka; Treasurer—G. Gehring of Wichita.

The entertainments included a drive to the salt plants. Topeka was selected as the place for the next meeting.

**Kentucky.** The twenty-third annual meeting of the Association was held at Glen Springs, June 19 to 20, and is reported as having been the most enthusiastic and successful meeting held. 125 members were present and 25 new members were elected.

A number of papers, principally of a commercial nature, were presented:

J. W. Gayle, A. Dimmitt, R. J. Snyder, V. Driskell, H. P. Chenoweth and C. S. Porter:—The proper relations which should exist between competing druggists.

A. Dimmitt:—The advantages and disadvantages of our pharmacy law with suggestions for improvement.

C. S. Porter, V. Driskell and E. A. Walthall:–Is a druggist justifiable in diverting the sale of a proprietary preparation?

V. Driskell: — Why are loaded sponges the most expensive and the most unsatisfactory?

A. Dimmitt:—Why every druggist should be a member and attend the meetings of his state association.

E. B. Walthall, V. Driskell and W. H. Tibbals:—Is soda water a profitable adjunct to the drug business?

A. Dimmitt, E. B. Walthall and V. Driskell:—Is it profitable or to the advantage of the retail druggist to manufacture his stock of pills, tablets, fluid extracts, elixirs and medicinal syrups?

The following officers were elected: President—C. L. Diehl, Louisville; Secretary—J. W. Gale, Frankfort; Treasurer—V. Driskell, Ghent.

Either Crab Orchard or Rock Castle Springs, the selection to be made by the Ex. Com., will be the next place of meeting.

**Louisiana.** The eighteenth annual meeting was held at New Orleans, April 23 and 24. The Association represents but 12 percent of the registered pharmacists of the state and there has been a decrease in membership as compared with that of former years. The small balance in the treasury is no doubt largely due to the fact that the proceedings for 1899 were not printed. The pharmacy bill to be introduced into the next Legislature is to contain a clause demanding college graduation as a pre-requisite to registration.

The principal officers for next year are: President—M. Bernstein; Corresponding Secretary—Miss F. V. Yeager; Recording Secretary—W. P. Duplantis; Treasurer—G. S. Brown.

The next meeting will be held in New Orleans in May 1901.

**Maine.** The thirty-third annual meeting was held at Portland, July 11 to 13.

The following officers were elected: President—W. H. Boynton of Biddeford; Secretary—L. H. Porter, Danforth; Treasurer—W. L. Drew of Portland.

The entertainments included a trip to the White Mountains.

**Maryland.** A four-days' meeting was held at Hagerstown ending June 22. During the past year the membership was increased from 132 to 167, but a larger membership is desired in order to secure pharmaceutical legislation for the state.

Besides Prof. Wm. Simon's lecture on Wireless telegraphy, the following papers were read:

J. M. Kennedy: What is the best preservative for fruit juices?

J. E. Bond: Are headache remedies containing acetanilid dangerous?

A. R. L. Dohme: What have been the causes preventing the enactment of a pharmacy law for Maryland?

L. Schulze: Free dispensaries.

The principal officers for next year are: President—W. E. Turner of Cumberland; Secretary — Louis Schulze of Baltimore; Treasurer—Wm. M. Fouch of Baltimore.

The selection of the time and place for the next meeting was left to the Executive Committee. The entertainments included a trip to the battlefield at Antietam.

**Massachusetts.** The nineteenth annual meeting was held at Newburyport, June 19—21, thirty-seven new names being added to the membership roll. Professors J. W. Baird and R. T. Greenleaf of the Massachusetts College of Pharmacy were elected honorary members.

C. B. Emerson of Haverhill, H. M. Whitney of Lawrence, A. Tilden of Boston and others who have been in the drug business for periods of from twenty-five to fifty years, recalled interesting events in their career and

compared the conditions then prevailing with those of to-day.

The principal officers for the ensuing year are: President—F. A. Hubbard of Newton; Secretary—Jos. F. Guerin of Worcester; Treasurer—T. B. Nichols of Salem.

**Minnesota.** The annual meeting was held June 19—21 at Owatonna. Among other proceedings a paper on the use of the metric system aroused considerable discussion. Dean Wulling of the Minnesota College of Pharmacy delivered an address on The evolution of the earth. A paper on short hours and early closing was read by S. Gamble of Minneapolis.

The principle officers for next year are: President—B. F. Kyseth of Sleepy Eye; Secretary—E. B. Wilson of Minneapolis; Treasurer—H. W. Reitzke of St. Paul.

The selection of the next place of meeting will be left to the Executive Committee. It will probably be Minnetonka.

**Missouri.** The annual meeting was held at Pertle Springs June 12 to 15, and though uneventful was full of interest to the large number of pharmacists in attendance. The association has a membership of 377 in good standing. Fifteen new members were elected.

The following papers were read:

C. Heinrichs—St. Louis: Hydrargyrum cum creta.

W. Mittlebach — Boonville: The coming revision of the U. S. Pharmacopœia.

J. T. Lewellyn—Mexico: Muscale buttons.

—— The manufacture of artificial diamonds.

F. Hemm—St. Louis: Practical pharmaceutical notes and observations.

—— Photography, its early history and place in pharmacy.

F. Hemm—St. Louis: Comments on assay processes of the U. S. Pharmacopœia.

H. M. Whelpley—St. Louis: A few notes on the microscope in the drug store.

The officers for the ensuing year are: President—P. A. Hess, Kansas City; Secretary—H. M Whelpley, St. Louis; Treasurer—Wm. Mittelbach, Boonville.

**Nebraska.** The 19. annual meeting was held at Beatrice, June 5 to 7. The membership is reported satisfactory. The finances are likewise good, $300.00 being in the treasury and no indebtedness. Only one paper was read, viz. that by Mr. Hoagland on Liquors. The principal officers elected are: President—A. W. Buchheit of Grand Island; Secretary—W. M. Tonner of Randolph; Treasurer—B. O. Kosta of Lincoln.

The entertainments included a lecture on Japan with stereopticon views by J. P. Raymond of Kansas City. The next meeting is to be held at Lincoln, May 7—9 next year, the different medical societies of the state having been invited to hold their meetings at that place at the same time.

**New Jersey.** The thirtieth annual meeting was held at Asbury Park, May 23 and 24. The Association has a membership of 364, and 25 new members were elected. It also has a remarkable cash balance of $2412.46. The principal officers for next year are: President—S. D. Wooley of Ocean Grove; Secretary—F. C. Stutzlen of Elizabeth; Treasurer—H. P. Thorn of Medford.

**New York.** "Without fear of disproof, it may be asserted that the annual meeting of the New York State Pharm. Ass'n. was the most

notable and significant of the twenty-two yearly gatherings of that body. It was a success from keel to main truck, attendance large, accomodation and entertainment larger, harmony of sentiment and importance of work largest." Thus the "Era" reporter sums up the meeting held at Newbury. June 26—30.

The idea of requiring graduation from a reputable college as a prerequisite for the state board examination seems to have come to stay, at least in New York. The druggists of New York, represented in their state association, now seem to be almost a unit in this demand. In order not to be too hasty, no attempt is to be made during the coming year to push such a requirement through the legislature. It is further intended that the State Regents shall assist in harmonizing and raising the educational standard of the colleges by controlling the entrance requirements.

The following papers were read by title:

W. J. Robinson—New York: Prescription incompatibilities in every day practice.

W. A. Dawson—Hempstead: Shop notes and dispensing hints.

C. S. Ingraham—Elmira: Request for the establishment of a standing committee on formulas.

A. B. Huested—Albany: Tendencies in pharmacy.

W. A. Bryan—Brooklyn: Botanical nomenclature.

C. W. Holmes—Elmira: History of the N. Y. State Pharmaceutical Association.

The report of the Committee on New Remedies was also read by title and referred for publication.

The new officers are: President—Felix Hirsemann, New York; Secretary—J. B. Todd, Ithaca; Treasurer—T. W. Dalton, Syracuse. The next meeting will be held in Buffalo, sometime between June 20 and 30, 1901, the exact date being left to the local committee.

**Ohio.** The twenty-second annual convention was held at Put-in-Bay June 19—21.

The following papers were read and discussed:

J. Feil—Cleveland: The next step (viz. in pharmaceutical education).

Th. Wetterstroem — Cincinnati: On the comparative alcoholic strength of proprietary articles.

J. H. v. Stein — Upper Sandusky: What constitutes a good member.

The principal officers for the ensuing year are: President—B. S. Young of Ada; Secretary—L. C. Hopp of Cleveland; Treasurer—J. H. v. Stein of Upper Sandusky.

The selection of time and place for the next meeting was left to the incoming president.

**Oklahoma.** The tenth annual meeting was held at Shawnee, April 4 and 5. The following papers were read:

F. B. Lillie — Guthrie: What our Association does for the druggist.

J. C. Burton—Stroud: How are we to increase our trade and profit?

W. B. Wheeler—Guthrie: Keeping stock.

C. R. Miller—El Reno: Some preparations profitable for Oklahoma druggists to make.

The principal officers elected for next year are: President—C. A. Dow of Pond Creek; Secretary—F. M. Weaver of Oklahoma City; Treasurer—L. J. Hord of Ponca City; Local Secretary—J. W. Pryor of Oklahoma City, the place of the next meeting, to be held on the second Wednesday of May, 1901.

**Pennsylvania.** The 23rd annual meeting was held, June 26—29, at Ebensburg, Cambria Co. A number of papers were read:

J. S. Patton—York: Manufacture of zinc ointment.

H. B. Maisch—Phila.: White wax.

R. M. Wills—Washington: A new powder folder.

J. S. Patton:—What is the best course to pursue to suppress the sale of proprietary medicines on which there is no profit.

L. Emanuel—Pittsburg: Anti-nostrum prescriptions.

C. J. Thomas:—Shall the pharmaceutical press be throttled?

D. E. Levell—Phila.: Book-keeping by druggists.

F. X. Moerck—Phila.: Estimating the volume of gas in sweet spirit of nitre and peroxide of hydrogen.

C. Leedom—Phila.: The commercial side of pharmacy.

H. Kraemer—Phila.: Adornment of drug stores with paint.

Professor Remington gave an address on The commercial training of the pharmacist, and Professor Lowe a sketch of affairs in South Africa.

In order to stimulate the scientific and technical work of the Assn., the committee on the President's address recommended that a bronze medal be awarded annually for original papers presented on new formulas, new processes and new or improved pharmaceutical instruments or appliances. This committee also called attention to the fact that the association by resolution is committed to the principle of graduation from a recognized college of pharmacy as a necessary preliminary to registration.

The following officers were elected: President—S. K. Hammond, West Chester; Secretary—J. A. Miller of Harrisburg; Local Secretary—D. J. Thomas Scranton. Next year the Association will hold its annual meeting at Oneonta Hotel, Harvey's Lake above Wilkesbarre.

**Texas.** The annual meeting was held at Dallas, May 15 to 17. The Association has a balance of $314.00. The principal officers for next year are: President—J. L. Hazlett; Secretary—R. H. Walker; Treasurer—G. J. F. Schmidt; Local Secretary—C. E. Craycroft of Sherman, where the next meeting will be held on the third Tuesday in May, 1901.

**American Chemical Society.** — Papers read at the joint sessions of the Chemical Section of the A. A. A. S. and the American Chemical Society.

1. H. A. Loos:—The composition of abietic acid.
2. M. T. Bogert and A. H. Gotthelf:—The direct synthesis of ketodihydroquinazolines from orthoamido acids.
3. ——The direct synthesis of ketodihydroquinazolines from orthoamido nitriles.
4. ——Experiments with some substituted benzoic acids and their nitriles.
5. H. W. Hillyer:—On some derivatives of phenyl ether.
6. T. C. Stearns:—The principal body to which the odor of jonquil is due.
7. R. P. Williams:—The metric system, past, present and prospective.
8. A. L. Winton:—The detection of coal-tar dyes in food products.
9. J. F. Geisler:—Estimation of fat in sweetened condensed milk.
10. H. C. Sherman:—Some analyses of milk and cream, with re-

ference to the condition of fat globules.

11. E. H. S. Bailey:—The action of various preservatives upon cider

12. C. L. Reese and G. C. Stone:—Experimental demonstration o the manufacture of sulphuric acid by the latest process.

13. R. Hitchcock:—A new process for the manufacture of white lead.

14. H. K. Moore:—Production of caustic soda and bleaching powder by electrolysis.

15. M. Engle Pennington and G. C. Kuesel:—An experimental study of the gas producing power of *Bacillus Coli Communis* under different conditions of environment.

16. W. D. Bancroft:—Note on the Landsberger-McCoy apparatus.

17. A. P. Saunders:—The action of potassium hydroxide on chloroform.

18. L. Kahlenberg:—The theory of electrolytic dissolution as viewed in the light of facts recently ascertained.

19. L. Kahlenberg and R. M. Austin:—The toxic action of solutions of acid sodium salts on *Lupinus albus*.

20. L. Kahlenberg and H. F. Mehl:—The toxic action of electrolytes upon fishes.

21. L. Kahlenberg and J. B. Emerson:—The toxic action of solutions on the leech and the vinegar eel.

22. E. C. Uhlig:—Method for the analysis of glass.

23. E. H. Miller and H. Fisher:—Note on the ferrocyanides of lead and cadmium.

24. W. A. Noyes:—The structure and configuration of camphor and its derivatives.

25. M. T. Bogert:—The direct preparation of imides of the bibasic acids from the corresponding nitriles.

26. F. C. Phillips:—Some compounds of methyl sulphide with metallic halides.

27. H. T. Vulte and H. Winfield Gibson:—Investigation as to the nature of corn oils.—Determination of the constitution.

28. W. O. Atwater:—Some results of experiments with the respiration calorimeter.

29. L. P. Kinnicutt and H. W. Haynes:—Notes on the determination of the spontaneous combustion of oils when mixed with wool waste.

30. L. P. Kinnicutt:—The incubator test for determining the purity of sewage effluents.

31. H. Snyder:—Application of chemical methods to the testing of wheat and flour.

32. H. C. Sherman and H. S. J. Hyde:—Note on the determination of phosphorus as phospho-molybdic anhydride.

33. J. K. Haywood:—The adulteration and methods of analysis of the arsenical insecticides.

34.——The composition and analysis of London purple.

35. L. Kahlenberg:—Differences of potential between metals and non-aqueous solutions of their salts.

36. W. J. Gies:—New methods for the separation of some constituents of ossein.

37.——Notes on the constituents of ligament and tendon.

38. A. J. Hopkins:—Apparatus for calibration by telescope without an assistant.

39.——A simple laboratory thermostat for room temperature.

40.——Crystallization of copper sulphate for use in quantitative analysis.

41. C. F. Mabery and O. J. Sieplein:—The determination of the formulas of the hydrocarbons and chlorine derivatives in Pennsylvania, California, Japanese and Canadian petroleum by molecular refraction.

42. C. F. Mabery and W. O. Quayle:—The sulphur compounds and their oxydation products and the unsaturated hydrocarbons in Canadian petroleum.

43. L. W. Andrews:—A new volumetric method for the determination of silver.

44. Chas. F. Mabery:—Composition of the hydrocarbons in Pennsylvania petroleum, liquids and solids above 216°.

45.——Composition of the hydrocarbons in California petroleum, liquids and solids.

46.——Composition of the nitrogen compounds in California petroleum.

47. Chas. F. Mabery and O. J. Sieplein:—The chlorine derivatives of the hydrocarbons in California petroleum.

48. H. W. Harper:—Texas petroleum.

PROCEEDINGS RECEIVED:

Missouri — Proceedings of the twenty-second annual meeting of the Missouri Pharmaceutical Association held at Pertle Springs, Warrensburg. June 12—15 1900.

South Carolina—Proceedings of the twenty-fourth annual meeting of the Pharmaceutical Association of the State of South Carolina, held in Charleston, May 17 1900.

## Universities and Colleges.

PAMPHLETS RECEIVED:

Brooklyn College of Pharmacy — Tenth annual announcement. Session of 1900—1901. Pamphlet, pp. 52.

Massachusetts College of Pharmacy—Thirty-fourth annual catalogue 1900—1901. Pamphlet, pp. 53.

Northwestern University School of Pharmacy—Circular of information for 1900—1901 and Register of Alumni. Pamphlet, pp. 64.

Rush Medical College—The fifty-eighth annual announcement. Pamphlet, pp. 43. 1900.

Scio College — Annual announcement of the Department of Pharmacy, 1900—1901. Pamphlet, pp. 31.

The University of Chicago—The university Record of the University of Chicago. Published weekly by authority. Vol. V, No. 11. 1900. Pamphlet, pp. 118.

Wisconsin College of Physicians and Surgeons—Milwaukee. Eighth annual announcement, Pamphlet, pp. 54. 2) Second annual announcement of the Department of Dental Surgery, 1900—1901. Pamphlet, pp. 40.

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## Bibliography.

CATALOGUES RECEIVED:

F. A. Brockhaus—Leipzig. Monthly list of new books. June 1900.

B. G. Teubner—Leipzig. Mittheilungen. Nr. 2—3. 1900.

U. S. Dept. Agr. — Washington. Monthly list of publications. June 1900.

# Pharmaceutical Review.

VOLUME 18. **SEPTEMBER, 1900.** NUMBER 9.

## Editorial.

The organization of a Conference of American Pharmaceutical Faculties at Richmond last May adds new interest to the ever important subject of pharmaceutical education. One of the prime objects of this conference is to bring about a better general understanding on many of the educational topics that at present are doubly perplexing because of the lack of harmonious operation of the numerous educational institutions concerned. It is not to be expected or hoped that all institutions will be raised or lowered to the same level. The questions of preliminary education, apprenticeship, character and scope of courses, of degrees and finally the extent of recognition to be given to college graduates by our state laws and examining boards are so vast in their scope that a thorough discussion of all of them within the next few years is out of the question. It is to be hoped, however, that one of the most fundamental of these will be thoroughly ventilated at the meeting of the conference in September of next year. Besides perfecting the organization of the conference little more than this can be expected.

Inasmuch as these educational problems will, no doubt, be thoroughly discussed from all points of view in a not distant future, it would be unwise to present a one-sided view of them or any of them at present. It should prove of interest, however, at any time and especially at this time of the year when our colleges and universities are soon to open their doors for another year's work, to note what changes in personnel, in the curriculum, in equipment etc. have been made or are under immediate contemplation.

The brief statements of changes in the Supplement of this number show that the personnel has not undergone any great changes. What the effect on the individual institution the resignation of a particular professor, or the appointment of a new professor will be

is of minor importance to the pharmaceutical college world. Neither has the equipment of any college undergone such changes as to materially affect our course. The changes in equipment are in no small measure, apparently at least, due to two tendencies of an evolutional character.

The first, but less striking one, is the ever growing belief of the necessity of a better, more comprehensive and deeply founded education. Incidental to this is also the question of amount of preparatory education in the schools and of preliminary drug store training. The growth of the former, as a natural consequence, crowds out the latter more and more. It is instructive indeed to read what the various announcements have to say on these points.

The second tendency is possibly no more striking to the student of pharmaceutical education and of education of the professions in general, but it is one that has not yet come home with sufficient force to the largest class of our pharmaceutical calling, to the retail druggist. If it had, his position on the question of apprenticeship would be very different from what it is.

Schools and colleges of pharmacy were first established in this country as well as in European countries for the purpose of supplementing the instruction given the apprentice by his preceptor. Like in the trades, and to a less extent in the learned professions, the apprenticeship system was for a long time the only road to mastery in pharmacy. With the more rapid growth of the natural sciences the insufficiency of this system as the only means of instruction became more and more apparent, hence the establishment of evening schools, and later also of day schools in which the routine of the shops was supplemented by instruction by men who had developed a special capacity to impart information more or less systematically.

This was virtually a recognition of the fact that the apothecary shop had ceased to be what it once was as an educational institution. To have recognized its limitations was by no means a discredit to the druggists of this country, but to their credit it should be emphasized that they themselves supplemented the deficiency to the best of their ability and did not wait for the state to recognize its duties in this direction.

To some it may seem rather strange, however, that many of the advocates of the old apprenticeship system should now clamor for commercial training by the colleges and schools of pharmacy. If the

apprentice can no longer become acquainted with simple business forms in a drug store, wherein does the educational value of the apprenticeship system of to-day consist?

The writer has so often emphasized his conviction of the necessity of drug store experience that he need not fear to be misunderstood in asking the above question. Commercial courses are evidently to become generally established and they will unquestionably do much good, but it is equally important that we should comprehend the tendencies that demand their establishment.

Neither is this second tendency, the growing inefficiency of the drug store as a school for apprentices, confined to this country. It is being recognized more and more even in Germany where the old system was developed to greater perfection than possibly in any other country. Let us hope, therefore, that faculties and boards of trustees will not only tumble over each other in trying to supply this demand that has recently found expression, but that they will calmly reflect upon its causes as well.

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The British Pharmaceutical Conference met July 23 to 25 in London where it had not met since 1874. The sessions were held principally in the rooms at Bloomsbury Square, where the Conference was the guest of the Pharmaceutical Society of Great Britain.

Although 137 new names were added to the membership list, the actual increase was reduced to a minimum by deaths and resignations. The small deficit of last year has fully doubled so that the financial condition of the Conference is none too bright.

Why the Conference gave up its former affiliation with the British Association for the Advancement of Science does not become fully apparent from the explanation made. The number of papers read, viz. twenty-five, though fair is none too large for an organization of this kind in a densely populated country like England.

These papers, as will be seen from the enumeration of the titles in the Supplement, cover a variety of subjects. The ones that caused a somewhat animated discussion were those on the new British Pharmacopœia. Whatever the opinion concerning the character of the work, it became quite apparent, and has been for some time, that the British pharmacist is discontent at not being represented officially in the revising body.

# Otto Wallach.

Tracing the development of organic chemistry during the nineteenth century, Ernst von Meyer in his History of Chemistry appends the following sentence to the chapter on hydrocarbons and their derivatives: "Upon the hydrocarbons which occur in many plants, the volatile oils, the recent excellent investigations of O. Wallach have begun to throw some light." This was in 1888 when Wallach had not much more than begun his long series of investigations.

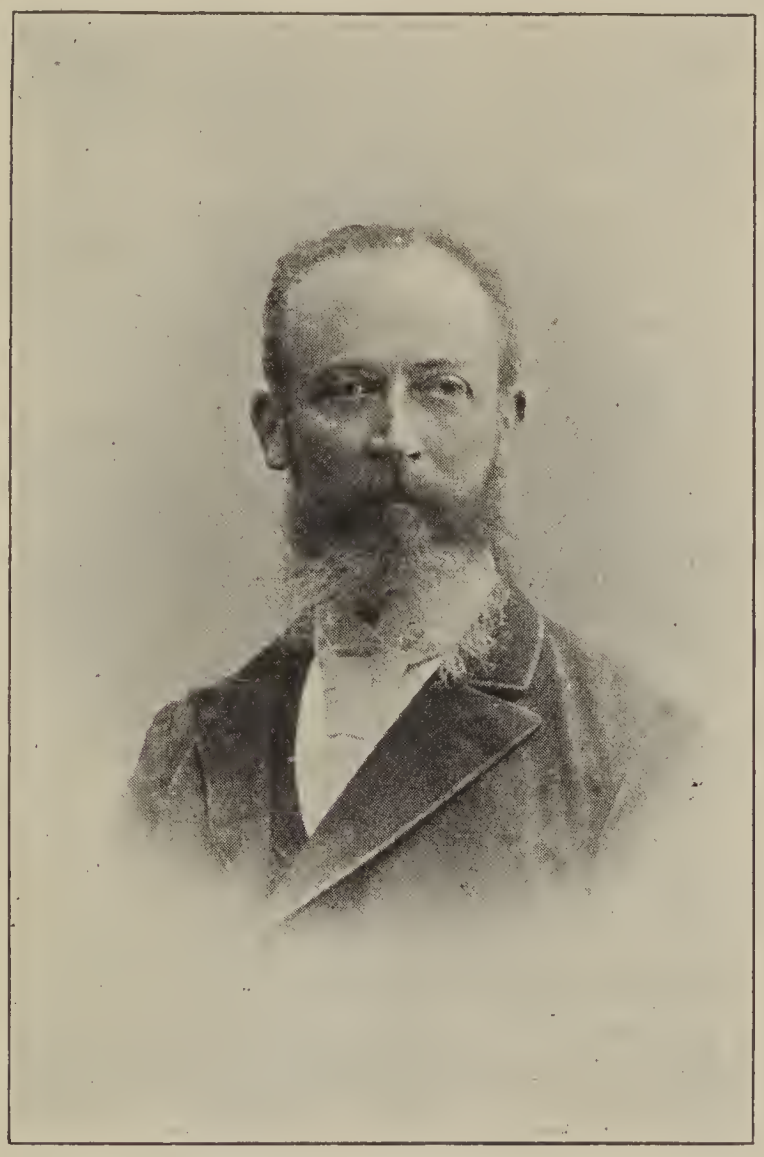
At the memorial exercises of Ferdinand Tiemann, held at a meeting of the German Chemical Society late last year, Emil Fischer, Professor of Chemistry at the University of Berlin, made the statement that no chapter of organic chemistry had undergone such rapid changes as that of the "terpenes and camphors."

Since 1884 numerous chemists the world over have given more or less of their attention to the attractive subject of the chemistry of the volatile oils, and the host of problems connected with the constitution of their constituents. Though chemists in England, France and Germany did commendable work on the volatile oils previous to 1884 and although the work accomplished by several others since that time is of the greatest importance, yet to Wallach belongs the credit of having paved the way for the phenomenal progress made during the past fifteen years. Those who are at all familiar with the confusion that existed in the literature of volatile oils before Wallach took up the study of the "terpenes and camphors" will realize how appropriate was the designation, "Messiah of the terpenes," which the late Professor Flückiger bestowed upon this chemical contributor to pharmacognostical literature.

Otto Wallach was born in Königsberg, March 27, 1847. His earlier chemical work comprised the study of the action of potassium cyanide on chlorine substitution products of aldehydes, of phosphorus pentachloride on acid amides yielding a new class of bases, etc. He is author of the "Hülfstabellen für die chemische Analyse," 1879, and of the "Tabellen zur chemischen Analyse, 2 Theile," 1880.

The work on volatile oils was begun in 1884. It is rather remarkable that Hell and Stürcke worked on the same subject at about same time and arrived at much the same results obtained by Wallach. Yet while we find little more in the chemical literature on volatile oils by Hell, this contribution by Wallach was but the first of a long

series. In the Annalen alone the number of his contributions up to the present time is not less than 45. Wallach's work soon attracted attention the world over. During the collegiate year 1886—87, the writer was engaged in the examination of two oils, about which but little was known, in accordance with the methods which were then commonly used. Interested, therefore, in the literature on volatile oils, he immediately recognized the difference between Wallach's work



**Otto Wallach.**

and that of his predecessors. When the opportunity offered itself to continue his studies abroad, the writer did not hesitate to go to Bonn in order to work with this new master of a subject as old as organic chemistry itself.

To pharmaceutical readers it may be of special interest to know that Professor Wallach lectured on pharmacy or rather on pharmaceutical chemistry as well as on subjects of advanced organic chemistry. He also had charge of the laboratories in which most of the

pharmacy students worked. As a result many of those pharmacy students who, after having completed their state board examination, continued their studies took their major work with him. It thus happens that many of the names of his co-workers are those of German pharmacists, e. g. Gildemeister, Otto, Scheidt, Werner, Engels, and others.

Without discrediting Wallach's previous work on other subjects in the least, it was no doubt due very largely to his work on volatile oils and related subjects that his name became generally known as an investigator. When Victor Meyer left Goettingen in 1889 to accept a position in Heidelberg, Wallach was chosen to fill the vacancy. About ten of his advanced students went with him including the writer. In the newly erected organic laboratory of the Chemical Institute at Goettingen, "the Terpenkünstler," as we were called at Bonn, began renewed activity.

The University of Goettingen has always pointed with pride to the cosmopolitan character of its student body. There was a time when thirteen out of twenty-five students in Wöhler's laboratory are reported to have been Americans. It is not surprising, therefore, that some of the American chemical students in the Georgia Augusta were attracted by Wallach's investigations. One American pharmaceutical student at least, H. V. Arny, has worked under Wallach since the writer left the city whose citizens, according to Heine, belong to one of four classes, namely professors, students, philistines and "Vieh."

To try to give any further account of Wallach's work would lead too far for a brief biographical sketch of this kind. Suffice it to state that as one of the first who were invited by the German Chemical Society to address this body on recent developments along their special lines of Work Wallach gave a summary of his investigations in the form of a lecture in Berlin in 1890. In addition the following bibliography* may here be given as an outline of his work which may be useful to persons specially interested in the subject.

1884. ANNALEN DER CHEMIE:—
Bd. 225, p. 291—1. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

1885. ANNALEN DER CHEMIE:—
Bd. 227, p. 277—2. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

* Prepared by Irvin Brandel.

Bd. 230, p. 225—3. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Borneol, sylvestrene, terpin hydrate.

1887. ANNALEN DER CHEMIE:—

Bd. 238, p. 78—4. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Sesquiterpenes.

Bd. 239, p. 1—5. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Theoretical resumé.

Bd. 241, p. 288—Ueber Nitrosate und Nitrosite.

Bd. 241, p. 315—6. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Derivatives of terpinene.

1888. ANNALEN DER CHEMIE:—

Bd. 248, p. 161—Ueber Amylen Nitrosat und einige von diesem abgeleiteten Verbindungen.

Bd. 245, p. 191—Ueber die Benutzbarkeit der Molecularrefraction für Constitutionsbestimmung innerhalb der Terpengruppe.

Bd. 245, p. 241—7. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Bd. 246, p. 221—8. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Limonene, dipentene, phellandrene.

Bd. 246, p. 265—9. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Oxidation experiments with eucalyptus oil.

1889. ANNALEN DER CHEMIE:—

Bd. 252, p. 94—10. Abhandlung: Ueber die Bestandtheile einiger ätherischen Oele.

Bd. 252, p. 106—11. Abhandlung: Neues über die Isomerie in der Terpengruppe; p. 136—Ueber die Molecularrefraction des Camphers.

Bd. 252, p. 141—12. Abhandlung: Ueber das Rotationsvermögen einiger Terpenderivate.

Bd. 253, p. 249—13. Abhandlung: Pinol.

1890. ANNALEN DER CHEMIE:—

Bd. 258, p. 319—14. Abhandlung: 1. Ueberführung von Verbindungen der Terpenreihe in Hydro-m-xylol; 2. Ueber das sogenannte Massoyen; 3. Ueber Pinen.

Bd. 259, p. 309—15. Abhandlung: Ueber Pinol; 2. Fenchol, eine neue mit Campher isomere Verbindung.

1891. Annalen der Chemie:—

Bd. 262, p. 324 — Ueber einige neue Derivate des Amylen Nitrosat.

Bd. 263, p. 129—16. Abhandlung: Ueber neue Verbindungen der Campherreihe und ein neues Terpen.

Bd. 264, p. 1—17. Abhandlung: 1. Verhalten des Pinens gegen Brom; 2. Verhalten der gebromten Derivate des Limonen.

Bd. 268, p. 197—18. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

1891. Berichte d. d. Chem. Gesellschaft:—

Bd. 24, p. 1525—Ueber Terpene und Campher.

Bd. 24, p. 3984—Ueber Derivate des Carvols.

1892. Annalen der Chemie:—

Bd. 269, p. 326—19. Abhandlung: Studien in der Campher und Fenchon Reihe.

Bd. 269, p. 347—Vergleichung des Bornylamins und Fenchylamins.

Bd. 270, p. 171—20. Abhandlung: 1. Isomerieverhältnisse innerhalb der Limonen Reihe; 2. Producte der Einwirkung von Chlor auf Dipenten dichlorhydrat.

1892. Berichte der d. d. Chem. Gesellschaft:—

Bd. 25, p. 916—Ueber Campher und Camphersäure.

1893. Annalen der Chemie:—

Bd. 271, p. 300—21. Abhandlung: 1. Zur Charakteristik der Sesquiterpene; 2. Ueber das ätherische Oel der Paracotorinde.

Bd. 271, p. 308—Gewinnung von Terpenen aus Harz.

Bd. 275, p. 103—23. Abhandlung: 1. Verhalten des krystallisirten Terpineols; 2. Derivate des Carvols.

Bd. 275, p. 145—24. Abhandlung: Zur Kenntniss der Terpene und der ätherischen Oele.

Bd. 276, p. 296—25. Abhandlung: Ueber isomere Menthylamine.

Bd. 277, p. 105—26. Abhandlung: Carvone und Dihydrocarvone.

Bd. 277, p. 154—27. Abhandlung: Ueber das Verhalten cyclischer Ketone.

1893. Berichte d. d. Chem. Gesellschaft:—

Bd. 26, p. 3072—Ueber Isomerien innerhalb der Terpenreihe.

1894. Annalen der Chemie:—

Bd. 278, p. 302—28. Abhandlung: Ueber das Verhalten der Oxime cyclischer Ketone und die Ueberführung von Terpenderivaten in aliphatische Verbindungen von gleicher Anzahl der Kohlenstoffatome.

Bd. 279, p. 366—29. Abhandlung: 1. Ueber Verbindungen der Carvonreihe; 2. Zur Charakteristik der Sesquiterpene.

Bd. 281, p. 127—30. Abhandlung: Ueber Halogenverbindungen; Zur Constitutionsbestimmung in der Terpenreihe.

Bd. 281, p. 147—31. Abhandlung: Ueber Pinol und dessen Ueberführung in Verbindungen von gleichem Kohlenstoffgehalt und von neuem Typus.

Bd, 284, p. 324—32. Abhandlung: Zur Kenntniss des Fenchons.

1894. Berichte d. d. Chem. Gesellschaft:—

Bd. 27, p. 1495—Ueber Oxidationsproducte des Carvons.

1895. Annalen der Chemie:—

Bd. 286, p. 90—33. Abhandlung: Ueber Thujon.

Bd. 286, p. 119—34. Abhandlung: Ueber gebromte Derivate der Carvonreihe.

Bd. 287, p. 371—35. Abhandlung: Ueber Phellandren.

1895. Berichte d. d. Chem. Gesellschaft:—

Bd. 28, p. 31—Ueber Oxymethylenverbindungen einiger Ketone der Terpenreihe.

Bd. 28, p. 1308—Ueber Limonennitrosochloride.

Bd. 28, p. 1773—Zur Constitutionsbestimmung des Terpineols.

Bd. 28, p. 1955—Ueber Isomerien innerhalb der Terpenreihe.

Bd. 28, p. 2703—Ueber Oxydationsproducte aus Bihydrocarvon.

Bd. 28, p. 2708—Ueber Pinol.

Bd. 28, p. 1660—Ueber einige Verbindungen der Carvacrol und Thymol Reihe.

1896. Annalen der Chemie:—

Bd. 289, p. 337—36. Abhandlung: Ueber Pulegon.

Bd. 291, p. 342—37. Abhandlung: Ueber die Oxidationsproducte des Terpineols; 2. Ueberführung von Terpineol in Carvon auf einem neuen Wege; 3. Ueber neue Verbindungen der Pinolreihe.

1896. Berichte d. d. Chem. Gesellschaft:—

Bd. 29, p. 1595—Ueber Condensationsproducte cyclischer Ketone und Synthesen innerhalb der Terpengruppe.

Bd. 29, p. 2955—ditto.

1896. NACHR. KGL. GES. D. WISS. VON GOETTINGEN.
Jahrg. 1896, p. 5—Ueber neue Verbindungen der Fenchonreihe.
Jahrg. 1896, p. 3—Ueber Reuniol.
Jahrg. 1896, p. 8—Ueber Pinolhydrat.
1897. ANNALEN DER CHEMIE:—
Bd. 296, p. 120—38. Abhandlung: Ueberführung von Menthon in Verbindungen der Citronellalreihe.
1897. BERICHTE D. D. CHEM. GESELLSCHAFT:—
Bd. 30, p. 423—Ueber Verbindungen der Thujonreihe.
Bd. 30, p. 1094—Ueber Condensationsproducte cyclischer Ketone.
1897. NACHR. KGL. GES. D. WISS. VON GOETTINGEN:—
Jahrg. 1897, p. 306—Ueber Ketone aus Terpinennitrit.
1898. ANNALEN DER CHEMIE:—
Bd. 300, p. 259—39. Abhandlung: 1. Ueber Pulegensäure; 2. Ueber ein synthetisches Pulegon.
Bd. 300, p. 278—40. Abhandlung: Ueber cis- und trans-Isomerie in der Mentholreihe.
Bd. 300, p. 286—41. Abhandlung: Ueber einen neuen Campher aus Pinen (Pinocamphon).
Bd. 300, p. 294—42. Abhandlung: 1. Ueber Fenchon; 2. Ueber Fenchonsäure; 3. Oxydation des Fenchons.
1898. BERICHTE D. D. CHEM. GESELLSCHAFT:—
Bd. 31, p. 338—Sulfonale cyclischer Ketone.
1899. ANNALEN DER CHEMIE:—
Bd. 302, p. 371—43. Abhandlung: Ueber Fenchon.
Bd. 305, p. 223—44. Abhandlung: 1. Ueber Reductionsproducte des Carvons und Eucarvons; 2. Zur Charakteristik des Carvons; 3. Umwandlungsproducte des Carvontribromids.
Bd. 305, p. 261—45. Abhandlung: Benzaldehyd und einige Ketone der Terpenreihe.

# Acetanilid.*

By *Charles W. Gorr.*

## TESTS.

### Physical.[1]

Acetanilid commonly occurs as white, shining laminae with silky lustre and unctuous touch. It melts, when pure, at 113—114°. It

* Continued from p. 312.

is soluble in somewhat less than 200 parts of water at 15° and in 18 parts of water at 100°.[2] From the hot aqueous solution it crystallizes in white shining laminae. It is readily soluble in ether, alcohol, chloroform, but little in carbon disulphide.

For Hynson's test see this journal vol. 16, p. 425.

**Chemical.**

*In aqueous solution.* Although chlorine forms characteristic substitution products of acetanilid (see chemical properties) none of these seem to have been suggested as a test for acetanilid.

If to a cold aqueous solution of acetanilid, bromine water be added until the bromine is no longer decolorized, para-bromacetanilid[3] melting at 165° separates out. Hirschsohn[4] (1888).

*In hydrochloric acid solution.* 1. Acetanilid dissolves readily in **hydrochloric acid** when warmed and no precipitate is produced upon subsequent dilution with water.[5] Platt[6] (1896). The hydrochloride of acetanilid is evidently formed. The slight warming does not hydrolize the acetanilid to aniline and acetic acid. Inasmuch, therefore, as water decomposes acetanilid hydrochloride regenerating acetanilid (comp. Noelting and Weingaertner, Ber. 18, p. 1340; also Knorr, Ann., 245, p. 376, foot-note), it may seem strange that a clear solution should result upon dilution with water. The test evidently implies an excess of hydrochloric acid over that used in No. 2. If the experiment is conducted with the quantities given in No. 2, a precipitate will result upon dilution with water even when the acid solution has been boiled for a minute.

2. If to 0.1 g. of acetanilid—in small laminae, or comminuted if crystals are coarser—1 ccm. of **hydrochloric acid** be added, solution results for a moment. Upon the slightest disturbance, however, a mass of needle-shaped crystals results, which upon the addition of

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[1] Compare Physical Properties.

[2] Flueckiger, Reactionen, p. 1, states that "when 0.5 g. acetanilid is boiled with 5 ccm. of water, the test tube removed from the flame and the turbid solution again warmed after two minutes, the undissolved acetanilid sinks to the bottom in oily drops."

Experiments, however, show that the acetanilid sinks to the bottom of the solution at once when heated, even below the boiling point. It, therefore, requires prolonged boiling to bring about the turbidity mentioned by Flueckiger. Though pure, dry acetanilid melts at 114°, under water it melts at or somewhat below 100°. This test is apparently of no consequence. In lowering the melting point of acetanilid, water evidently acts merely as impurity, for the solidified acetanilid resulting upon cooling has the usual melting point.

[3] This reaction is made use of to detect the presence of acetanilid in phenacetine (Hirschsohn, 1888: Ph. Zeitschr. f. Russl., 27, p. 794). As little as 5 p. c. of acetanilid in phenacetine can be detected by a slight modification of the above test. Comp. Methods of Separation.

[4] Pharm. Ztschr. f. Russl., 27, p. 794.

[5] This is only true when small proportions of acetanilid are used.

[6] Jour. Am. Chem. Soc., 18, p. 142.

water revert to the laminar form. Ritsert[7] (1889). This phenomenon can possibly be best explained as follows: As the acetanilid goes into solution as hydrochloride, it abstracts hydrogen chloride from the aqueous hydrochloric acid. A supersaturated solution, that is, supersaturated for the weakened acid, thus results and, like supersaturated solutions, rapidly crystallizes when disturbed.

Owing to the readiness with which the insoluble crystals are formed, this test is not always obtained. The test is best performed by holding the test tube at an angle of about 45° and carefully adding the acid.

In an experiment on a larger scale 5 g. of acetanilid were shaken with 50 ccm. of hydrochloric acid. Upon the addition of the acid the acetanilid was converted into a glutinous mass of needle-shaped crystals. Upon heating complete solution resulted. The solution was then allowed to cool slowly. Upon the slightest disturbance it congealed to a white crystalline mass.

To 0.1 g. of acetanilid dissolved in 3 ccm. of hydrochloric acid,[8] solution of **chlorinated lime** is carefully added so as to form a layer. The milky turbidity which results at first disappears upon shaking. After standing for some time, needle-shaped crystals with silky lustre result.[9] Salzer[10] (1888).

2. According to Platt[11] (1896) "**chlorine water** added to a solution of acetanilid in hydrochloric acid gives a dark blue coloration which afterwards fades. The chlorine water may be substituted by chloride of lime solution." This reaction does not always take place, depending again upon the amount of acetanilid hydrolized. (See Chemical Properties.)

Chlorinated lime solution, added to a partially hydrolized solution of acetanilid in hydrochloric acid, causes the formation of a fine precipitate (see Salzer l. c.) which redissolves immediately; at the same time the solution is tinted pink, changing rapidly to lavender.

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[7] Pharm. Ztg., 34, p. 546. This test is recommended not only as a test for identity of acetanilid, but also as a means for distinguishing it from methacetine (p-methoxy acetanilid) and phenacetine (p-ethoxy acetanilid). Warnecke (1890), Pharm. Ztg., 35, p. 760, reports the same observation.

[8] According to the author, sulphuric acid can take the place of hydrochloric acid.

[9] The author states that the crystalline compound (m. p. 165°) does not agree with any of the known (1888) chlorine substitution products of acetanilid mentioned in Beilstein. Inasmuch as the para compound melts at 172° (see Beilstein, 3rd ed., vol. II, p. 363), it would seem probable that the crystals of Salzer were para-chloracetanilid.

[10] Pharm. Ztg., 33, p. 364.

[11] Jour. Am. Chem. Soc., 18, p. 142.

**Bromine** water added in excess to a hydrolized acid solution of acetanilid produces a heavy yellow to a white precipitate of the monobrom derivative of aniline. This precipitate examined microscopically is found to be made up of a fine interlacing network of needle-like crystals. A similar precipitate is obtained by means of bromine water in aqueous solutions of acetanilid. Platt (loc. cit.).

Compare Hirschsohn[12] who obtained para-brom acetanilid by treating aqueous solutions of acetanilid with bromine water. An experiment was conducted in the laboratory as follows: Bromine water was added to a solution of acetanilid in cold hydrochloric acid and to a similar solution boiled for about a minute (i. e. a partially hydrolized solution). In the former case the bromine was only decolorized at first, but on further addition when the solution was colored by excess of bromine, a flocculent precipitate soon separated out. In the latter case a dense white precipitate separated out immediately upon the addition of bromine. Drawings of the precipitates thus obtained would be useless, as the character of the crystals as well as their melting points depended upon the amount of the hydrolysis of acetanilid. The cold hydrochloric acid solution did not seem to hydrolize the acetanilid enough, even after a lapse of several days, to give the characteristic indo-phenol test for aniline.

Hydrochloric acid solutions with **ferric chloride.** Utescher[13] (1888) described the test as follows: 0.5 g. of acetanilid, boiled with 1 cc. of N/1 hydrochloric acid solution, will give upon the addition of 20 cc. of water and 1 cc. of N/1 potassium hydroxide solution only a slight reddening, while phenacetine will give a beautiful violet-red when treated in the same way.

This test was also tried by the writer with the cold hydrochloric acid solution of acetanilid in the cold and that boiled for one minute. In the former case the reagent had no affect at first, but on boiling the mixture acquired a faint tint of red when looked at in reflected light. The partially hydrolized solution acted differently. Although there was no immediate change upon the addition of the reagent, slight warming changed it to olive green, rapidly becoming darker, a stringy precipitate is formed and the liquid soon changes to an emerald green.

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[12] Pharm. Ztschr. f. Russl., 27, p. 794.
[13] Apoth. Ztg., 3, p. 484.

"The hydrochloric acid solution diluted and treated with a weak solution of **chromic acid** gives a yellowish-green coloration, which gradually turns to a dark green. Potassium hydroxide produces a blue precipitate with this solution." Platt (loc. cit.).

Potassium dichromate solution added to acetanilid dissolved in cold hydrochloric acid will cause no change. Slight boiling, however, will cause a dirty brown coloration, whereas a flocculent, dark colored precipitate will separate out upon the addition of the same reagent to a partially hydrolized solution of acetanilid in hydrochloric acid. The mixture will slowly change to a deep olive-green. Boiling affects the solution only in that it becomes slightly more intense in color and translucent.

An olive-green color is produced by adding a crystal of **potassium permanganate** to the solution of acetanilid in hydrochloric acid. On standing the color is changed to mahogony-brown. Platt (loc. cit.).

Potassium permanganate solution was decolorized at first when added to a solution of acetanilid in cold hydrochloric acid. When added in excess the solution acquired the characteristic color of the reagent. Potassium permanganate solution, however, added to a hydrochloric acid solution, which was boiled for about a minute (i. e. partially hydrolized) caused a cycle of color reactions. Immediately upon the addition of the reagent a rose color appears, rapidly changing to a yellow, then Bismarck-brown, followed by violet, purple, then pale blue and finally a permanent grass-green or peacock-blue. These changes take place within half a minute after the addition of the reagent, just fast enough to distinguish the different colors.

*In sulphuric acid solution.* Platt (loc. cit.). "With concentrated **sulphuric acid** a colorless solution is formed unaffected by boiling. The solution in cold concentrated acid on long standing" (comp. Trommsdorf's test for purity) "acquired a pink-brown color. With excess of acetanilid the pink coloration developed quickly, is well marked, and changes gradually to an orange by reflected light. As a final change, tufts of delicate auricular crystals appear and the solution gradually becomes colorless."

0.1 g.[14] of acetanilid, heated with 2 cm. sulphuric acid until a slight browning appears, is cooled down from time to time. **Bromine**

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[14] Reactionen. Comp. Hirschsohn, Pharm. Ztschr. f. Russl., 27, p. 794.

water added gives a pale rose-red coloration which soon changes to many white microscopic crystalline needles.

Platt. "A solution of acetanilid in concentrated sulphuric acid when treated with a few drops of **potassium chromate** solution is changed to a dark green color. A dilute sulphuric acid solution so treated gives no reaction at first, but on standing it gradually acquires a reddish-brown and finally a dark olive-green."

Schaer.[15] Potassium dichromate, dissolved in sulphuric acid, and acetanilid added will immediately cause a purple-red coloration, then violet-red, rapidly changing to blue-green. (See also Tafel.[16])

According to Flueckiger,[14] 1 ccm. of a solution of 0.02 g. of potassium dichromate in 10 ccm. of water and 30 g. of sulphuric acid will give upon shaking a bright red color rapidly changing to a blue and finally disappearing.

With **potassium permanganate** a fiery red coloration results changing to a dull brown. When the permanganate is dissolved in the acid and the acetanilid then added, a dark red color is developed which rapidly changes to dirty brown. (Schaer, loc. cit.)

With **potassium chlorate** a red coloration is produced, which is intensified upon heating. The addition of water changes this to yellow.[17]

**Chlorine** water causes dark violet streaks in the solution, while the upper layer is of a light green.[18]

With **potassium ferricyanide** a fiery red liquid results which soon fades. (Schaer, loc. cit.)

With **lead peroxide** or **manganese dioxide** the liquid changes to purple-violet, rapidly changing to olive-green. When the reagent is dissolved in sulphuric acid and the acetanilid added, the liquid becomes cherry-red, which soon changes to a dirty brown. (Schaer, loc. cit.)

With **cerium oxide** the liquid becomes fiery red, which color rapidly disappears. When the reagent is dissolved in the sulphuric acid and the acetanilid added, a more red-brown results which soon changes to a reddish-yellow. (Schaer, loc. cit.)

With **bismuth subnitrate** a yellow coloration results. (Schaer, loc. cit.)

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15 Arch. d. Pharm., 232, p. 249.
16 Ber., 75, p. 412.
17 Vitali, Arch. d. Pharm., 226, p. 323.
18 Th. Schlosser, Ztschr. d. all. oest. Ap. Ver., 25, p. 538.

According to Kottmayer,[19] acetanilid can be identified by treating 0.1 g. with sulphuric acid (80 pts. con. $H_2SO_4$ : 18 pts. water) and boiling for thirty seconds. The acetanilid is converted into aniline sulphate, free acetic acid and a small quantity of sulphanilic acid. The product of the reaction can now be tested for acetic acid and aniline. To a part of the cooled mixture add 1.5 volumes of absolute alcohol and warm carefully whereby the odor of acetic acid is given off. The aniline in the remaining sulphuric acid solution can be detected by the usual aniline test, such as idophenol, etc.

With nitric acid and **sodium nitrite** an orange-red with a distinct carmine-red ring at the surface of the mixture results. (Schaer, loc. cit.) Flueckiger[20] gives the following directions for the test: "0.03 g. of acetanilid and 0.03 g. of sodium nitrite are rubbed together and dusted on one ccm. of concentrated sulphuric acid. A fiery red color will result at the point of contact."

*In nitric acid solution.* Kunz-Krause[21] reports the following test by which acetanilid and its derivatives can be identified. Small quantities of fuming nitric acid are cautiously added to acetanilid until dissolved (to avoid a violent reaction) and evaporated on a water bath. Acetanilid, p-bromacet-o-toluid, p-chloracetanilid, p-bromacetanilid and p-nitroacetanilid when thus treated ignite spontaneously and burn with a smoky flame.

According to Flueckiger,[22] 0.2 g. of acetanilid treated with 2 ccm. of 30 p. c. nitric acid affects no change, but slight warming will cause solution with a yellowish-red coloration which will not increase by little boiling. Continuous heating on a water bath for several hours, however, will change the solution to a dark brown. According to Platt (loc. cit.) "Acetanilid is slowly soluble in the cold (diluted nitric acid) and without change in color, but with the separation of oil-like globules. This solution on slow evaporation gives a brown residue with a slight purplish tint. By boiling with dilute nitric acid a colorless solution is obtained with the evolution of pungent fumes."

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[19] Pharm. Post, 23. p. 473.
[20] Reactionen.
[21] Ph. Centrb., 39, p. 866.
[22] Reactionen, p. 2.

# Solution of Hypophosphites, Compound, without Sugar.

By *Ferdinand A. Sieker.*

Syrup of hypophosphites compound has been in use quite a number of years. More recently some demand arose for a preparation without sugar, because it was claimed that syrups will sometimes cause gastric disturbances because of the sugar they contain.

The following formula will yield a preparation that is similar to a commercial solution:—

| | |
|---|---|
| Calcium hypophoshite | 8.75 gm. |
| Potassium hypophosphite | 8.75 gm. |
| Sodium hypophosphite | 2.20 gm. |
| Ferric hypophosphite | 4.38 gm. |
| Manganese hypophosphite | 2.20 gm. |
| Quinine, alkaloid | 2.14 gm. |
| Diluted hypophosphorous acid (10 %) | 5.5 cc. |
| Strychnine sulphate | 0.0685 gm. |
| Potassium citrate | 5.5 gm. |
| Citric acid | 0.7 gm. |
| Glycerin | 250.0 cc. |
| Spirit of Orange, Compound, U. S. P. | 8.5 cc. |
| Alcohol | 90.0 cc. |
| Solution of saccharin, N. F. | 8.0 cc. |
| Water sufficient to make | 1000.0 cc. |

Dissolve the ferric and manganese hypophosphites with the aid of the potassium citrate and citric acid in 150 cc. of water by boiling.

Dissolve the quinine by boiling it with 200 cc. of water to which the hypophosphorus acid has been added. (This solution should have a distinct acid reaction toward blue litmus paper.) Mix the two solutions, add the calcium, sodium and potassium hypophosphites, the strychnine sulphate and sufficient water to make 625 cc. and warm until solution has been effected.

To the cool solution add the glycerin, the spirit of orange, compound, previously diluted with the alcohol, and the solution of saccharin. Filter, and pass sufficient water through the filter to make 1000 cc. The solution of saccharin, N. F., should be prepared from saccharin that is 500 times as sweet as cane sugar.

A solution prepared according to the above formula possesses a greenish-yellow color, an acid reaction, an agreeable flavor and a bitterish-sweet taste. It is perfectly transparent and keeps well if stored in filled amber bottles and exposed only to diffused daylight.

It retains its greenish-yellow color much longer than the corresponding syrup.

A sample over eight months old is in perfect condition, while another sample that was exposed to sunlight in a flint bottle has a brown color. The specific gravity of the preparation is about 1.077 at 15° C.

The dose of this preparation is 7.5 cc. (2 fluid drachms) which is equivalent to calcium hypophosphite, and potassium hypophosphite of each 0.065 gm. (1 grain); sodium hypophosphite, manganese hypophosphite and quinine hypophosphite, of each 0.016 gm. (¼ grain); ferric hypophosphite, 0.032 gm. (½ grain); and strychnine sulphate, 0.0005 gm. ($\frac{1}{128}$ grain).

## The Precipitate that forms in Syrup Hypophosphites, Compound, N. F.

By *Ferdinand A. Sieker.*

Syrup of Hypophosphites, Compound, N. F., contains 3.5 parts of calcium hypophosphite, 1.75 parts of each potassium and sodium hypophosphites, 0.225 parts of each ferric and manganese hypophosphites, 0.5 parts of potassium citrate, 0.2 parts of citric acid, 0.1125 parts of quinine hydrochlorate, 2.2 parts of tincture of nux vomica, 77.5 parts of sugar and enough water to make 100 parts. The first edition of the National Formulary does not refer to the precipitate that forms in this syrup when it is set aside for some time, especially in a cool place. The second edition of that semi-official work states that "it is not intended to be perfectly clear and should be shaken before using." The precipitate that forms in this syrup is of a crystalline character and adheres to the bottom of the bottle. When the syrup is agitated, this precipitate separates in the form of scales, which cannot be properly incorporated.

An examination of the washed precipitate showed that it is calcium citrate, $(C_6H_5O_7)_2Ca_3.4H_2O$. Heated in a glass tube or on

a platinum wire, carbonization takes place and an alkaline residue remains. A little of the precipitate dissolved in acetic acid and ammonium oxalate, T. S., added gives a reaction for calcium. The acetic acid solution treated with lead acetate, T. S., gives a precipitate soluble in nitric acid. The precipitate separated from the solution is insoluble in potassium hydroxide, but soluble in cupric chloride, T. S. No iron or manganese was found in the precipitate.

As the precipitate that forms in this syrup is inert and cannot be properly incorporated, it may be removed by decanting the clear syrup from the crystals or by straining the syrup through muslin.

According to Warrington*, 1 part of crystallized calcium citrate dissolves in 1180 parts of water at 14° C. and in 1730 parts of water at 90° C.

Laboratory of Lehn & Fink, New York.

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# Notes on the Plague in China and India.†

By *Joseph Marshall Flint.*

Then some time later Haffkine,‡ making experiments along the same line, reported to the health commissioner that his efforts to obtain an antitoxin for plague by methods similar to those used by Behring, Kitasato and Roux for diphtheria were unsuccessful and that his experiments resulted negatively. At a latter period Lustig and Galeotti§ had a similar experience, but they found, however, that the essential toxin was situated in the body of the plague organism and was of the nature of a *nucleoprotein toxique*. They succeeded in isolating this toxin by the following method: A three days' growth of the plague bacillus on large agar plates is scraped off and dissolved in 1 percent KOH. This solution is filtered and acidulated with dilute acetic acid, whereupon it yields an abundant white precipitate which is washed and dried and in this state can be kept indefinitely. It is prepared for use by dissolving in a dilute solution of sodium bicarbonate (0.5 percent). This *nucleoprotein toxique*¶ is soluble in

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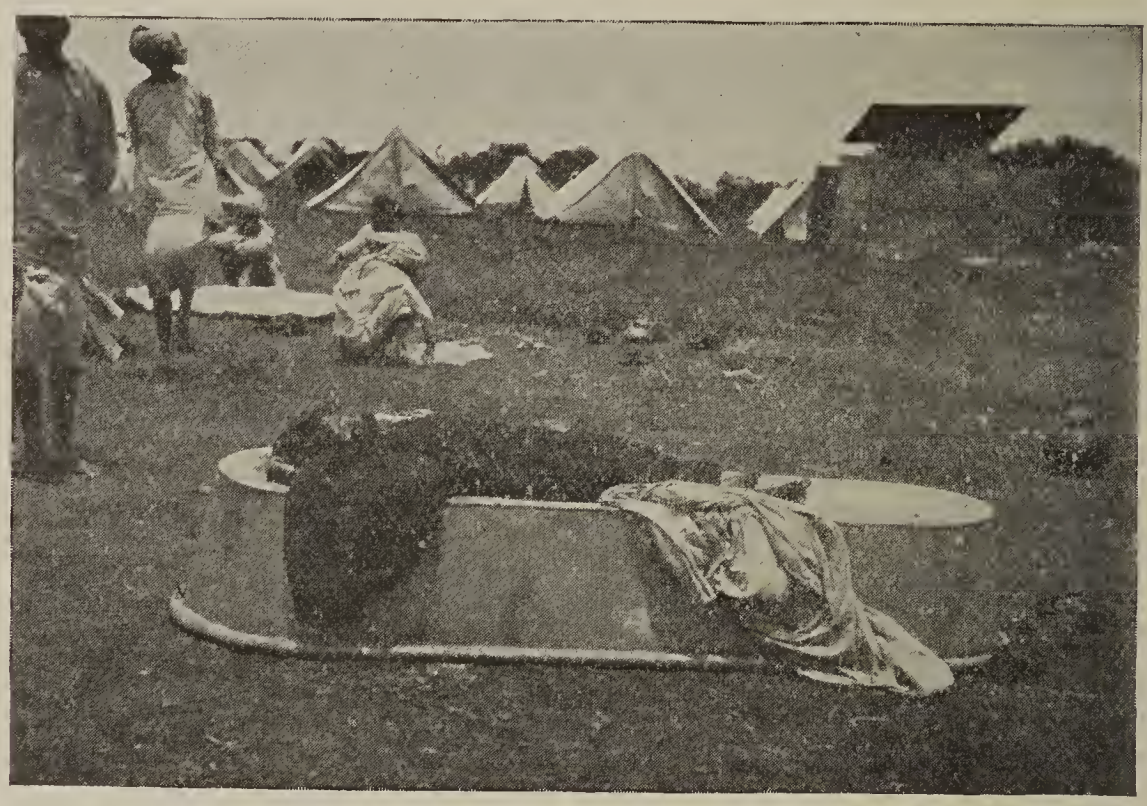
* Roscoe and Schorlemmer's Treatise on Chemistry, Vol. III, Pt. II, p. 434.
† Continued from p. 372. From Johns Hopkins Hospital Bulletin.
‡ Report on the Outbreak of Bubonic Plague, 1896—97. Bombay, 1897.
§ Lustig and Galeotti: Lo Sperimentale. 1898
¶ Galeotti: Arch. des Sciences Biologiques. Tome VIII, 1899.

alkalis and insoluble in dilute acids. In general it gives the proteid reactions and by artificial digestion can be split up into peptone and an insoluble nuclein. When injected experimentally it produces the symptoms which we have already described. It is from this *nucleo-protein toxique* that the antitoxin is manufactured by injecting it into a horse. The quantity used naturally depends a good deal on the condition and strength of the animal. The injection is followed by a violent reaction at the site of inoculation; an area of localized œdema half as large as a man's head may persist at the point of inoculation for many days. We saw that condition in one of the



**Child dead of plague, Poona Mortuary, preparation for funeral.**

horses at the Parel Laboratory in Bombay. The large injections are repeated as often as the condition of the horse permits until the required degree of immunity is produced. Then the serum is withdrawn and prepared in the usual way. As yet the number of antitoxic units has not been determined by animal titration and the preparation of the serum in large quantities has only just begun. The complete reported results thus far include 175 inoculations, with 100 deaths and 75 recoveries, or a mortality of 57.30 percent. Thus, the mortality for plague averages about 73.70, so that, at present, the serum saves about 16 percent of the cases. In these inoculations the cases were not selected but were taken as they came, and included 18 in which dissolution was imminent. After the injection a hypothermic

action was noted which seems in plague cases to be a specific reaction, as it was never obtained when people who were not suffering with plague were inoculated. At times considerable prostration seemed to follow the injection and a slight increase in the cardial weakness so that caffein, camphor or ether were often given with the antitoxin. After the second injection there was an amelioration of the conditions. The antitoxin, according to Galeotti, acts in a manner exactly opposite to the *nucleoprotein toxique.* The pulse becomes less frequent and the dicrotism disappears; there is an augmentation in the force

**Mohammedan girl being buried by hospital authorities.**

of the heartbeat, while the buboes, at the same time, become less painful, and any tendency to suppuration is arrested. Bacilli, moreover, tend to disappear from the blood. In pneumonic cases and in the severer gastro-intestinal infections, the antitoxin in its present strength apparently has no effect.

Soon after the outbreak of plague in India, M. Haffkine, formerly of the Pasteur Institute, who had been at work in India on some problems concerning cholera, began the preparation of a prophylactic against plague.* The principle involved in the preparation of that fluid is similar to that followed by Lustig somewhat later in the

* Haffkine: The plague prophylactic. Ind. Med. Gazette, June 1897.
—— Remarks on the plague prophylactic fluid. Brit. Med. Jour., 1897, Vol. II.

manufacture of his Heilserum; namely, that the plague toxin resides in the body of the pest bacillus and cannot be obtained from the soluble products of its growth. The preparation of the Haffkine prophylactic fluid is now carried on, on a large scale, in Bombay, and it is shipped all over India and to many other parts of the world. At present the prophylactic meets with great opposition from the natives, especially the Hindus, who will not submit to inoculation because the fluid contains meat, and thus offends one of their most cherished religious principles. To meet this objection an effort is being made to procure a medium on whi·h to grow the organisms from a substratum gluten and other substances free from meat extracts.

The manufacture of the prophylactic is quite simple, and through the kindness of Dr. Melne, who had charge of the Parel Laboratory in Haffkine's absence, we were able to follow the prophylactic through the various stages of its preparation. A kilogram of finely chopped goat's flesh, after macerating in hydrochloric acid, is placed into an autoclave and heated for six hours under a pressure of three atmospheres. This is then filtered and neutralized with KOH and diluted up to three litres, when it becomes the medium in which the plague bacillus is grown. Some plague material is put into these flasks and the bacillus is identified by what Haffkine has described as the stalactitic growth. If such cultures rest absolutely undisturbed for five or six days, after being inoculated at the surface, fine delicate thread-like processes can be seen hanging from the surface into the depths of the bouillon, which have a very strong resemblance to the stalactites that hang from the roof of a grotto. This growth, according to Haffkine, is pathognomonic of the plague bacillus, and the purity of such a culture can be tested microscopically. The culture is put into a Pasteur flask, from which a large series of 3-litre flasks are inoculated after it is certain that the original culture is uncon taminated. These are grown in a huge, darkened room, containing long tables on which hundreds of these 3-litre flasks rest. Owing to the high mean temperature, thermostats are unnecessary in India. To make the prophylactic it is necessary to get repeated crops of the stalactites in each flask and to keep the surface inoculated; a small amount of sterile "ghee," a sort of clarified butter, which floats on the surface and always contains after the original inoculation a few bacilli, is added so that after repeated shakings the surface of the culture is always reinoculated. In this way five or six crops of

stalactites are obtained before the serum is finished, and this takes, as a rule, about six weeks. After agitating the flasks, the little clumps of bacilli sink slowly to the bottom and a new surface growth slowly appears. The culture is killed by immersion in a constant water-bath at 70° C. for three hours when some carbolic acid or thymol is added, and while care is taken to keep it well shaken, the prophylactic is decanted into small bottles and is then ready for use.

The usual dose of the plague prophylactic was about 2 cm., but at Hubli, where it was used most extensively, Leumann* was in the

**Burning ghât, Poona Plague Hospital.**

habit of using a greater quantity at each injection. He always took into consideration, however, the age and physical condition of the patient in making the inoculations. An ordinary antitoxin syringe is used for this purpose and the injection made well into the subcutaneous tissue. Injections into the skin are apparently more painful than those made well below the corium. After two inoculations with the plague prophylactic the blood of the patient usually gave the Widal reaction. This, however, is not obtained so readily after a single protective injection. Leumann allows from 14 to 20 days to elapse between the first and second injections, and regards the constitutional reaction of headache, fever and malaise as more important

* Report No. 7569, of 1898.

than the agglutination test. Extremes of age do not seem to affect the value of the inoculation, as on one occasion a child 10 days old was inoculated, while on another a woman of 90 was protected against the disease. Women as far advanced in pregnancy as the seventh month were inoculated without the occurrence of any unfavorable symptoms, a fact which is rather interesting when one considers that all pregnant women taking the disease itself abort. To avoid, as far as possible, the injection of the protein in the incubation stage of the disease, it was regarded a safe rule not to inoculate any one with a temperature of 100° F. until it was certain that he was not suffering from the plague.

Since it has now been generally recognized that, under the conditions which obtain in India, the hygienic and sanitary measures have little or no effect in influencing the course of the epidemic or lessening the mortality from the disease, the results obtained at Hubli have been most successful and gratifying. In all some 78,000 inoculations were done in a period of four months in Hubli, in the province of Dhárwár, many of which were, however, on the inhabitants of the outlying districts and villages. It seems that the double inoculations have a greater protective power against the disease than single injections of the prophylactic, which statistically is shown to amount to 10 percent of the total mortality among the inoculated. But in Dhárwár the results were even better than at Hubli; for there were, among 4,926 single inoculations, 45 cases and 15 deaths; and in 3,387 double inoculations, 2 cases and 1 death.

Moreover, among these inoculations were undoubtedly included some cases where the prophylactic was given to those in the incubation period of the disease. Hubli, where the Haffkine serum received its first large and comprehensive test, is a mercantile town of about 50,000 inhabitants. It was attacked by the pest at the beginning of the monsoon rains, and the average monthly rainfall between October and April reached 28 inches. Although a large health camp was established and as many plague regulations as possible were put in force, it was evident that the authorities could not cope with the epidemic, so they determined to make a thorough test of the prophylactic. Mr. Cappell, the collector of Dhárwár, says: "If this experiment had failed, the mortality, judged by the actual mortality among the uninoculated, would have been appalling. All possible sanitary measures in the shape of disinfection, unroofing of houses, and segregation were applied concurrently with the inoculation as the

government is already aware; but the rate of mortality among those who held back from inoculation rose at one time to a height which, I believe, has never been approached elsewhere—standing in the third week of September at the figure of 657 per thousand per week."

The duration of the protection afforded by the serum could not be definitely determined, although the majority of the citizens were protected for at least 5 months. In 69 households, all of the inoculated members escaped the disease while some of the uninoculated in the families succumbed to the disease. Perhaps a more conclusive idea of the scope of the enormous experiment may be gathered from the appended table, which shows that at only one period did the non-inoculated have a percentage advantage over the inoculated in the mortality tables and that was when the epidemic was not severe and the number of the inoculated was low.

| Dates. | Number of non-inoculated in Hubli. | Number of twice inoculated in Hubli. | Deaths from Plague amongst | | Percentages in favor of | |
|---|---|---|---|---|---|---|
| | | | Non-inoculated. | Twice inoculated. | Non-inoculated. | Twice inoculated. |
| Five weeks ( From 11th May, 1898, to 14th June, 1898. ) | 44,573 | 531 | 47 | 1 | 44% | ..... |
| Week ending | | | | | | |
| 21st June, 1898 | 41,494 | 2,220 | 22 | 1 | ..... | 18 p.c. |
| 28th June, 1898 | 39,042 | 3,956 | 29 | *Nil.* | ..... | 100 " |
| 5th July, 1898. | 36,020 | 5,460 | 55 | 3 | ..... | 64 " |
| 12th July, 1898 | 33 255 | 7,289 | 34 | 2 | ..... | 72 " |
| 19th July, 1898 | 29,716 | 8 959 | 82 | 6 | ..... | 75 " |
| 26th July, 1898 | 24,112 | 10,311 | 100 | 9 | ..... | 80 " |
| 2nd August, 1898 | 21.031 | 12,660 | 140 | 9 | ..... | 85 " |
| 9th August, 1898 | 15,584 | 15,845 | 272 | 14 | ..... | 95 " |
| 16th August, 1898 | 10,685 | 19,491 | 386 | 31 | ..... | 96 " |
| 23rd August, 1898 | 6,367 | 23,362 | 371 | 20 | ..... | over 98 " |
| 30th August, 1898 | 4,094 | 26,547 | 328 | 20 | ..... | 96 " |
| 6th September, 1898 | 2,731 | 28,671 | 227 | 23 | ..... | over 99 " |
| 13th September, 1898 | 1,116 | 30,911 | 143 | 30 | ..... | " 99 " |
| 20th September, 1898 | 973 | 31,683 | 106 | 24 | ..... | " 99 " |
| 27th September, 1898 | 603 | 31,872 | 58 | 16 | ..... | " 99 " |

# The Rise and Fall of Epsom Wells.*

By *D'Arcy Powers.*

Mr. George Clinch contributes some interesting notes on Epsom Wells and Epsom Downs to the Home Counties Magazine for April

* From Janus, 5, p. 239.

1900. He says that the mineral springs at Epsom are situated near the highest point of Epsom common, at a distance of about a mile west of the town. Their waters are charged with sulphate of magnesia derived from the bed of London clay of which Epsom common is composed. Local tradition asserts that the Epsom Wells were found accidentally in 1618 by Henry Wicker who, during a dry summer accidentally came across a small hole filled with water. This he enlarged so as to form a pond, but it then appeared that in consequence of the bitterness of the water the cattle would not drink of it and thus its mineral character was detected. The fame of the waters soon grew and so many strangers visited Epsom that in 1621 the owner of a spring enclosed it with a wall and built a kind of shed for the convenience of the sick persons who were taking the waters. By the year 1640 the reputation of the Epsom Wells had extended to foreign countries and as a consequence persons of distinction from France, Germany and other parts of Europe visited this little Surrey village. After the Restoration Epsom became more famous than ever and a regular service of coaches was established to convey visitors daily to and from London. Pepys visited it in July 1663 and gives as usual a lively picture of his experience. He found the town so full that he could get no lodging and had to sleep at Ashtead "at a lodging in a little hole we could not stand upright in." He went to the Wells the following day—Sunday 26th July—, "where great store of citizens, which was the greatest part of the Company, though there were some others of better quality. I met many that I knew, and we drank each of us two pots (of the water) and so walked away, it being very pleasant to see how everybody turned up his tail, here one and there another in a bush, and the women in their quarters alike." On the following day he rode through Epsom "the whole town over seeing the various companys that were walking there; which was very pleasant to see how they are there without knowing almost what to do, but only in the morning to drink the waters. But Lord! to see how many I met there of citizens that I could not have thought to have seen here or that they had ever had it in their heads or purses to go down thither."

By the year 1690 the proprietor of Epsom Wells found it necessary to extend the accommodation for his visitors. He built a ball room seventy feet in length as well as other necessary apartments, and a long walk leading from the London road through Epsom was

laid out and planted with elm trees. The amusements provided for the patients and visitors comprised public breakfasts, dancing, and music every morning: horse-racing on the downs daily at noon (where now is held the Derby): cudgel-playing, wrestling and foot racing in the afternoon: and assemblies and card parties in the evening.

During the reign of Queen Anne, Prince George of Denmark was an occasional visitor at Epsom and John Toland who wrote about this time states that he had counted as many as sixty coaches in the ring on Sunday evenings, he also mentions that one of the elegant amusements of the place, popular among the visitors, was that of trying to catch a pig by the tail.

Among the various characters attracted to Epsom Wells was Sarah Mapp, a celebrated bone setter, of whom Percivall Pott says "We all remember that even the absurdity and impracticability of her own promises were by no means equal to the expectations and credulity of those who ran after her: that is, of all ranks and degrees of people from the lowest labourer or mechanic up to those of the most exalted rank and station: several of whom not only did not hesitate to believe implicitly the most extravagant assertions of an ignorant, illiberal, drunken female savage: but even solicited her company and, at least, seemed to enjoy her conversation. "Hogarth introduced her into his picture of "The Undertaker's Arms: or Consultation of Physicians."

The first indication of the declining popularity of Epsom Wells is found in the year 1706 when an apothecary named Levinstone, who was living at Epsom started the New Wells whose waters, he said, were of equal mineral value to that of the old springs. This was soon found to be false and when the trick was discovered, both the old wells and the new were brought into disrepute. Before the year 1720 the fashion of visiting Epsom for the sake of its mineral springs was rapidly on the decline. During the excitement caused by the South Sea Scheme the Wells recovered some of their popularity but the revival was only transitory. By the beginning of the present century the buildings in connection with the Wells were pulled down and the ground was purchased or leased by a Mr. Hitchener, who built a small house close by for his residence. The memory of the wells has disappeared for ever though Epsom salts will always remain as a valuable remedy in the pharmacopoeia under the name magnesium sulphate.

# MONTHLY REVIEW.

## Pharmaceutical Technique.

**Continuous and Automatic Laboratory Filter.**—Moscheles and Storch have devised a very efficient laboratory filter, shown in the accompanying illustrations. To prepare the apparatus for filtration, it is set up as shown in fig. 2 and the parts put together as in fig. 1. A filter cloth, corresponding in closeness to the material to be filtered, is laid between the individual parts. It is then tightly screwed up with a wrench and set up as shown in fig. 3. The vessel *A*, filled with the liquid to be filtered, is placed about 50 cm. higher than the filter and connected with the latter by a tube. The supply of the liquid is automatic and an overflow is impossible. The filtered liquid escapes by the tube *C*, and flows into the receiving vessel *G*. At *J* a vessel for collecting the filter residues, may be placed.

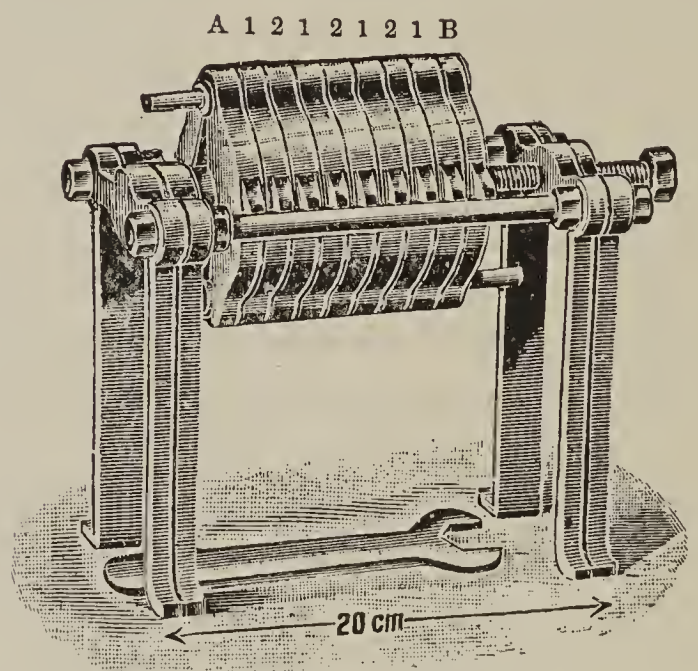



Fig. 1.

By connecting the vessels *A* and *G* by a tube *S*, the filtration can be conducted out of contact with the air. Oxidation of the filtrate or loss of

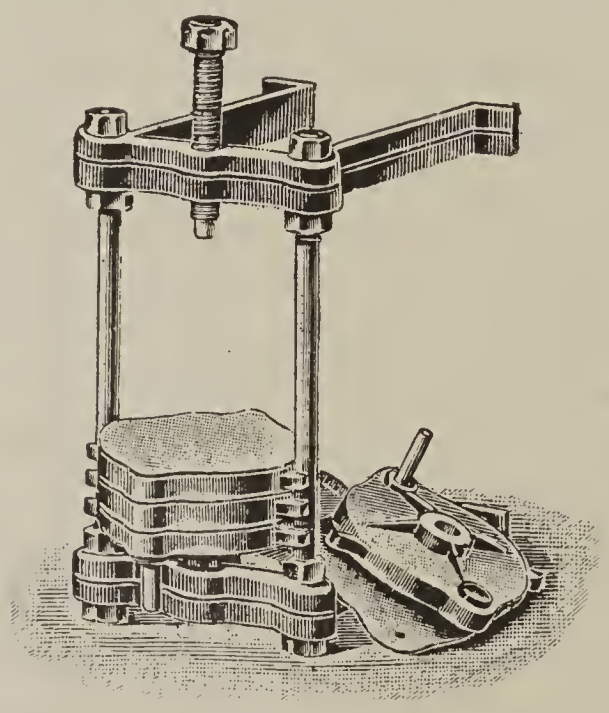


Fig. 2.

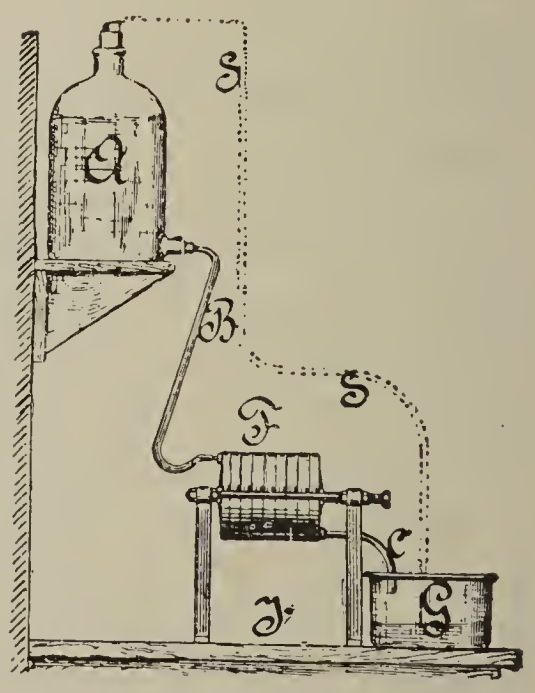



Fig. 3.

volatile solvents is thus excluded. A vacuum pump may be connected with the tube *S* and the filtration thus conducted in a vaccuum. As the filter is closed in all its parts, it can be located in a water or steam bath and the filtration conducted at a higher temperature. The filter is made by the firm of Warmbrunn, Quilitz & Co., Berlin, Germany.

[Apoth. Ztg., 15, p. 424.] *O. S.*

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## Chemistry.

**Report on Sandalwood Oil.**—E. J. Parry shows that the so-called santalol, which exists to the extent of about 90 percent in sandalwood oil, is a mixture of two or more bodies of an alcoholic nature. This paper is merely confirmatory of other papers recently published.

[Pharm. Journ., 65, p. 97; also C. & D., 57, p. 165.] *E. K.*

**Santalenes and Santalols.**—M. Guerbet has continued the investigation of these constituents of santal oil. Both alpha- and beta-santalene combine but slowly with glacial acetic acid when heated in sealed tubes. The hydrochlorides, $C_{15}H_{24}2HCl$, of both santalenes have an optical rotation in an opposite direction to the original sesquiterpenes, that of alpha-santalene hydrochloride being +6°1′ and that of beta-santalene hydrochloride +8°. Alpha-santalene gives only one crystalline nitroso-chloride, $C_{15}H_{24}NOCl$, melting at 122°, and insoluble in alcohol. Beta-santalene gives two isomeric nitrosochlorides, both of which are soluble in alcohol. These are separated from each other by fractional crystallization from alcohol, 95 percent, in which their solubility differs. The less soluble isomer melts at 101° C., the more soluble form at 106° C. The two santalols, isolated together from the other constituents of the oil as acid phthalic esters, are only separated from each other after saponification, with difficulty, by fractional distillation under reduced pressure. Thus obtained, alpha-santanol boils at 300—301° C., has a density of 0.9854 at 0° C., and the rotation —1°20′. Beta-santalol boils at 309—310° C., has the density 0.9868 at 0° C. and the rotation —56°. Dehydrating agents such as acid potassium sulphate or phosphoric anhydride remove a molecule of water from these alcohols, converting them into their respective isosantalenes, $C_{15}H_{24}$. Alpha-isosantalene boils at 255—256° C. and is very slightly dextrogyre, +0°2′ the beta form is more active, +6°1′ and boils at a slightly higher temperature, 259—260° C. The author corrects an error in his former communication, the sp. g. of the original oil employed being previously gixen as 0.9684 at 0° C. is now stated to be 0.9871 at that temperature. [Pharm. Journ., 65, p. 161; from. Journ. Pharm. Chim. [6], 11, p. 595.] *E. K.*

**Arsenic in Sodium Phosphate.**—It has recently been discovered that sodium phosphate is liable to contain considerable amounts of arsenic and

it is claimed that one sample of effervescent sodium phosphate contained 8.75 grains of arsenous acid per pound or 0.25 grain per maximum dose.

F. C. Bird discusses the detection and approximate determination of this dangerous impurity. Gutzeit's test with some modifications is adopted. A blank experiment is first made as follows: Take two conical 50 cc. flasks and place in each a rod of zinc one inch long. Mix 10 cc. strong hydrochloric acid with 50 cc. water, add a little starch T. S. and sufficient iodine T. S. to produce a faint but permanent blue color, thus oxidizing sulphides and sulphites. Divide the liquid between the two flasks, plug the necks of each with a tuft of cotton to prevent spurting and close the mouths of the flasks with disks of filter paper, one paper prepared with a drop of solution of lead subacetate, the other with a drop of mercuric chloride T. S. and dried. After one-half hour not the slightest discoloration should be discernable on the mercuric chloride paper and only a pale brown stain on the lead paper. The latter should be inspected frequently during the experiment, and whenever any darkening is noticed, one drop of iodine solution is added to each flask.

The phosphate is now tested in the same manner, 10 gm. of salt being used. If a reaction for arsenic is obtained, its amount may be approximately determined by comparing the stain with that produced by known weights of sodium arsenate.

[Chemist & Druggist, 56, p. 1073.] *W. A. P.*

**A Volumetric Method for the Estimation of Mercuric Chloride.**—Antiseptic solutions and tablets are usually colored and the aniline color used frequently interferes with the volumetric estimation of the mercury contained in them. E. Rupp proposes to precipitate the mercury with metallic iron ($HgCl_2 + Fe = FeCl_2 + Hg$), to oxidize the ferrous chloride formed with potassium permanganate—this also destroys the dye—and then to estimate the iron with potassium iodide and thiosulphate. From 20 cc. of a four percent solution of corrosive sublimate all mercury is precipitated when a few grams of reduced iron are added and the mixture agitated frequently for an hour.

[Arch. d. Pharm., 238, p. 298.] *W. A. P.*

**Estimation of Carbonates in Presence of Bicarbonates.**—Frank K. Cameron. Sodium carbonate in aqueous solution is always hydrolized to a certain extent the amount of hydrolysis depending upon concentration and temperature. The effect of solution is represented by the formula: $Na_2CO_3 + HOH = NaHCO_3 + NaOH$. Of these four electrolytes sodium hydroxide is the only one dissociated to any extent and hence the solution possesses the characteristics of a solution of sodium hydroxide.

When such a solution is now titrated at ordinary temperature with normal volumetric acid, sodium bicarbonate is formed according to the equation: $Na_2CO_3 + HCl = NaHCO_3 + HCl$, and, since the bicarbonate is neutral

to indicator, false results are obtained. All methods so far proposed for the estimation of carbonates in the presence of bicarbonates are unsatisfactory. Upon the fact that acid potassium sulphate is a well characterized strong acid, the author bases a new method for such estimations. With sodium carbonate the following takes place: $Na_2CO_3 + HKSO_4 = HNaCO_3 + NaKSO_4$. Since the products of the reaction are neutral, a normal solution of potassium hydrogen sulphate may be used for the determination of carbonates in presence of bicarbonates, phenolphtalein being used as indicator.

[Am. Chem. Jour., 23, p. 471.] *W. A. P.*

**The Assay of Nux Vomica.**—E. H. Farr and R. Wright, in a paper read before the British Pharmaceutical Conference, presented a critical study of the B. P. method of assaying nux vomica. This method directs the separation of strychine from brucine by the ferrocyanide process and the authors studied the solubility of strychnine and brucine ferrocyanide. As a result of the work they feel justified in the following conclusions and recommendations:

1. The assay process of the pharmacopœia gives results which, though not absolutely accurate, are sufficiently so for all practical purposes.

2. The volume of liquid taken should not exceed 5 cc. for liquid extract or 30 cc. for tincture.

3. 200 cc. wash-water, at a stated temperature, preferably 38° C., should be employed, and a correction made for strychnine dissolved.

4. The pharmacopœial instructions, as to simple agitation without stirring, and as to length of time allowed for precipitation of the strychnine, are to be strictly observed, as success depends altogether upon the conditions under which the process is carried out.

[Chemist & Druggist, 57, p. 162.] *W. A. P.*

**The Composition of Berberine Phosphate.**—Frank Shedden presented a paper to the British Pharmaceutical Conference which clears up the uncertainty regarding the composition of berberine phosphate, variously given as $(C_{20}H_{17}NO_4)_3$, $(H_3PO_4)_2$, $(H_2O)_5$ as $C_{20}H_{17}NO_4$, $(H_3PO_4)_7$ etc. The salt was prepared by the interaction of berberine acetone (a compound easily obtained pure) with an excess of phosphoric acid and the product recrystallized. The salt was bright yellow, non-hygroscopic and soluble in 14.3 parts of water at 16° C. Estimation of water, phosphoric acid and alkaloid contained in the salt gave the formula: $C_{20}H_{17}NO_4$, $(H_3PO_4)_2$ $(H_2O)_{1\frac{1}{2}}$.

[Chemist & Druggist, 57, p. 167.] *W. A. P.*

**Testing of Liquor Pancreas B. P.**—In a paper read before the British Pharmaceutical Conference, F. C. J. Bird points out that the test given is not as definite as it might be, and at times the point at which coagulation no longer occurs is rather difficult to determine. The amount of nitric acid used also influences the results, thus, taking 5 cc. fresh milk the following

effects were produced with varying quantities of acid: 1 minim, very fine curd, barely perceptible; 2 minims, coarser curd; 4 minims, increased coarseness; 6 minims, maximum coarseness; 8 minims, faint yellow tinge; 12 minims, full yellow color. All settle on standing, leaving 10 percent of clear supernatant liquid. The test is rendered much more sensitive and definite by the use of ether with the nitric acid—5 cc. of fresh milk shaken with 5 cc. of 0.717 ether yield a white opaque liquid, which, on the addition of 5 minims of nitric acid, coagulates to a perfectly solid mass; 5 cc. of milk which has been treated as directed in the B. P. with the prescribed quantity of *liq. pancreatis* of official strength, when shaken with an equal volume of 0.717 ether, furnishes a clear solution, the appearance of which is scarcely changed by the addition of 5 minims of nitric acid. Any coagulated casein will be found to rise as a layer between the liquids, but in sample of full B. P. strength the amount of separated curd should be indefinitesimal. It is therefore suggested that the wording of the official test might be advantageously changed to read: If 2 cc. of the solution, together with 0.2 gm. of sodium bicarbonate and 20 cc. of water, be added to 80 cc. of milk and the mixture be kept at a temperature of 45° C. for one hour, 5 cc. of the liquid shaken with an equal volume of ether, sp. gr. 0.717, should form a clear solution, in which no coagulation should be produced on the addition of 5 minims of nitric acid. [Chemist and Druggist, 57, p. 176.] *W. A. P.*

**The Source of Strophantus Glucosides and their Relation to each other.** Franz Feist explains why such variable results have been obtained from the administration of strophantus. Namely, while both *Strophantus kombé* and *Strophantus hispidus* give the glucoside reaction (a cross-section when moistened with strong sulphuric acid takes on an intense emerald-green color), many other species of strophantus bear seeds which contain no glucoside (sulphuric acid causes a red, pale yellowish-green or bluish color). Further, there have been obtained from strophantus two glucosides widely differing in their physiological effect.

The strophantin of Fraser is contained in the green seeds of *Strophantus kombé* of eastern Africa and possibly in other species. The glucoside of Arnaud, later prepared by Kohn and Kulisch and called pseudo-($\psi$)-strophantin by the author, seems to be contained in several varieties of seed. The strophantin of Merck, which is identical with the glucoside of Kohn and Kulisch, i. e. pseudo-strophantin, is obtained from brown (*hispidus*) seed. Arnaud and also Kohn and Kulisch prepared their glucoside (pseudo-strophantin) from green seed which certainly was not *Strophantus hispidus*. Strophantin (anhydrous) has the formula $C_{40}H_{66}O_{19}$, while dry pseudo-strophantin probably is $C_{38}H_{58}O_{15}$ or $C_{40}H_{60}O_{16}$. Both compounds contain one methyl group: when strophantin is hydrolized it splits off combined with the carbohydrate and the strophantidin contains no methoxyl, while when pseudo-strophantin

is similarly treated the methoxyl splits off combined with the pseudo-strophantidin, thus:

$$\underset{\text{Strophantin}}{C_{40}H_{66}O_{19}},\ aq = \underset{\text{Strophantidin}}{(C_{27}H_{38}O_7 + 2H_3O)} + \underset{\text{Strophantobiose-methyl ether}}{C_{12}H_{21}O_{10},\ CH_3}$$

$$C_{40}H_{60}O_{16} + H_2O = \underset{\text{Pseudo-strophantin}}{C_{27}H_{37}O_6 \,.\, CH_3} + \underset{\text{Saccharobiose (not isolated)}}{C_{12}H_{22}O_{11}}$$

Strophantin melts at 170–172° C., pseudo-strophantin has a melting point of 179° C. The former turns green with sulphuric acid, the latter changes to red (one exception is spoken of, a strophantin obtained from Shuchardt which had all properties, chemical and physiological, of true strophantin, but became red with sulphuric acid).

Another point of difference is noted when these two substances are hydrolized with dilute acid. When strophantin is warmed with 0.5 percent hydrochloric acid, slowly brought to 70° C., at this temperature strophantidin suddenly separates out in fine needles and almost quantitativeiy, while pseudo-strophantin must be boiled with a much stronger acid before pseudo-strophantin gradually separates.

Physiological experiments showed that pseudo-strophantin was nearly twice as strong as strophantin. [Berichte, 33, p. 263.] *W. A. P.*

**Some Observations and Suggestions Relating to the Chemistry of the British Pharmacopoeia.**—F. B. Power presents a number of observations on the chemistry of the British Pharmacopoeia, and incorporates therewith references to some previously-published observations. He treats, among other points, of errors, etc., in the monographs on acetanilide, arsenious and other acids, aconitine, amyl nitrite, bismuth carbonate and salicylate, caffeine and its citrate, chloroform, codeine, cotton, creosote, various iron compounds, lithium citrate, morphine hydrochloride, terebene, veratrine, etc. Incidentally, he also refers to discrepancies in certain publications.

Dr. Power's comments are necessarily restricted to statements of such errors as have from time to time been more prominently brought to his notice by a perusal of the work. Such an inspection, however, appears to him to indicate that the errors are somewhat more numerous than one might reasonably expect in a work of a national and authoritative character, the more especially as some of them might have been avoided by reference to standard works on chemistry, or to current chemical literature, or by simple experiments. He called attention to the value of the Digest of Criticism compiled in this country and evidently desired to supply an incentive for similar work in England. Whereas his lengthy and thorough report was thoroughly appreciated by many, it was not favorably received by a few who evidently resented his paper as "foreign" interference. The paper cannot be abstracted, but its contents may prove of value to our own Revision Committee as well.

[Pharm. Journ., 65, p. 133; C. & D., 57, p. 153.] *E. K.*

**Almond Oil and its Substitutes.**—W. C. Allen and E. T. Brewis point out that consideration of the different countries—Morocco, Canary Islands, Portugal, Spain, France, Italy, Sicily, Syria, and Persia—whence the principal supplies of almonds are got, makes it evident that we have to deal with the seeds of fruits produced under varying conditions of climate and soil. They are of opinion that the percentage of fixed oil present in the seeds does not exceed 45 percent from sweet and 38 percent from bitter almonds. The almond oil of commerce is chiefly obtained from the latter, and, in view of the differing sources of supply, it is unreasonable to expect absolute uniformity in the results of color reactions, etc., though the differences are only slight, and never reach a limit that would cause difficulty in distinguishing genuine almond oil from adulterated oil. Expression is given to the opinion that adulteration of almond oil is comparatively rare, though substitution by peach or apricot kernel oils is common. Kernel oils, in turn, are adulterated with oils of cotton-seed, sesame, poppy, olive and arachis, only one out of seven representative samples having been recognized as unsophisticated kernel oil.

[Pharm. Journ., 65, p. 87; C. & D., 57, p. 160.] *E. K.*

**Determination of Correct Melting Points.**—T. Tyrer and A. Levy continue their investigation on melting points, the substances more recently examined being salicylic acid, salol, carbolic acid, menthol, and thymol. Commercial salicylic acid and thymol stand the B. P. test, but purified salol (recrystallized), carbolic acid, and menthol must be taken if the official requirements are to be met. It is pointed out that no single method of determination is applicable to all pharmaceutical substances and the authors propose to ascertain which methods are most applicable in particular instances. The original in the C. & D. contains cuts of the apparatus used. [Pharm. Journ., 65, p. 91; C. & D., 57, p. 170.] *E. K.*

**Turpentine Oil and Terebene.**—C. T. Tyrer and A. Wertheimer have made a careful physical examination of American, Russian, and French turpentine oils and terebene made therefrom, and propose, at some future date, to investigate similar products from all possible sources. As a general rule they find that the higher the initial rotation of American turpentine the smaller is the product of inactive mixture capable of steam distillation and the higher the specific gravity. French turpentine has a greater tendency to oxidize than American, being intermediate between that and the Russian oil. The authors also find that, with proper attention to the conditions of manufacture, the requirements of the B. P. with regard to terebene, when prepared from American oil, can be reasonably complied with. From the results of their experiments the authors are inclined to doubt the existence, under ordinary conditions of manufacture, of a distinct inactive modification of the constituents of American turpentine or of

terebene prepared therefrom. Some of the authors' statements are evidently based on insufficient acquaintance with the literature on the subject.

[Pharm. Journ., 65, p. 101; C. & D., 57, p. 174.] *E. K.*

**Viscosity of Essential Oils.** — E. Dowzard thinks that useful information may be obtained by determining the viscosity of essential oils. A specimen of pure lemon oil had a viscosity of 139.6, whilst that of citrene was found to be 105.8, and that of a mixture of citrene with 7.5 percent of citral was 114.9. Assuming the viscosity of lemon oil to be fairly constant, such a test may be of some value, but examinations of authentic samples are required. The author evidently does not consider that the viscosity of adulterated or artificial products may easily be regulated.

[Pharm. Journ., 65, p. 100; C. & D., 57, p. 168.] *E. K.*

**Mercurous Iodide.** — F. B. Power summarises the methods which have been advocated for the preparation of mercurous iodide, and gives the results of determinations of the amount of iodine or pure mercurous iodide contained in specimens of the compound made in different ways. Those results indicate that precipitated mercurous iodide is quite uniform in composition and also sufficiently stable when properly protected. It is for the therapeutist, however, to decide whether a preparation containing more or less free mercury is more desirable from a medical standpoint.

[Pharm. Journ., 65, p. 87; C. & D., 57, p. 164.] *E. K.*

**New Apparatus for the Estimation of Chlorine and Nitrogen.** — J. F. Tocher describes a new form of apparatus for the determination of chlorine or nitrogen. The advantages claimed for it are that loss of chlorine or ammonia is entirely prevented, whilst the condensing apparatus is much simplified, and the fluid and washings can be readily run off for titration, the apparatus then being ready for another operation. In nitrogen determinations the flask can be used with advantage in decomposing the nitrogenous substance prior to distillation and prevents possible loss in transference. For details and description of apparatus the original in either of the journals mentioned below will have to be consulted.

[Pharm. Journ., 65, p. 106; C. & D., 57, p. 175.] *E. K.*

**Varnish Preparations** (Metallic Resinates, Linseed-oil and fatty acid compounds, Siccatives).

Frequent enquiries addressed to Merck & Co. with respect to this class of preparations have prompted them to compile the following notes on this subject.

Varnishes were formerly prepared by boiling linseed-oil together with oxide of lead, red lead, lead salts or oxides of manganese. These varnishes are, however, generally darker than the oils themselves and are accordingly not well adapted for the preparation of white paints. Their manufacture is

not only a nuisance to the neighborhood owing to the unpleasant odors to which it gives rise, but it is also a direct source of fire risk and should therefore be carried out at a considerable distance from dwellings. By a more recent method varnishes are frequently prepared by dissolving resinates or linoleates of metallic oxides in linseed-oil. Since by this method it is only necessary to heat the oil to 120 or 150° C. at the outside the process does not involve the above molestations and risks.

Varnishes of this kind, which are described by H. Amsel* as unboiled varnishes and by W. Lippert as metallic varnishes, in contradistinction to the older boiled or metallic oxide varnishes, should by no means be regarded as mere substitutes for the ordinary varnishes, but are by experts unanimously declared to be superior to the latter as regards their drying properties, lustre, transparency and the durability of the coatings. They are moreover extremely economical in actual use, since it is sufficient to take 1 to 3 p. c. of the manganese preparations and 2 to 5 p. c., at the utmost, of the lead preparations. It is therefore not surprising that these dry preparations have rapidly found favor in the varnish and lacquer trade.

It is advisable to prepare the metallic resinate varnishes by directly dissolving the resinates in the drying fatty oils instead of previously dissolving them in oil of turpentine, since the latter does not completely dissolve them, it being also said that varnishes prepared in this manner do not dry so well as those prepared with linseed oil only.

The varnishes are best prepared in the following manner, as recommended by Weger.† The siccatives should either be placed directly into the oil heated up to 120 or 150° C. at the most, and the process of dissolving may be hastened by continual stirring, or the following plan, which is particularly recommended for fused preparations, may be adopted: Dissolve 1 part of the siccative in 2 parts of linseed-oil at 120° C. and add this solution to 50—100 parts of similarly heated linseed-oil.

The following dry preparations are supplied for the manufacture of varnishes:

1. **Resinate of Manganese**, precipitated.—This preparation forms a flesh-colored loose powder which should be soluble in chloroform or hot linseed-oil. A quickly drying varnish is prepared in the following manner:

100 kilos of linseed-oil are heated to 120° C. and 2 kilos of the powder are added in small quantities and at short intervals, the whole being continually stirred during this process. The mixture is maintained at that temperature until completely dissolved.

2. **Resinate of Manganese**, fused.—This preparation is supplied in dark brownish-black, rosin-like lumps, which should be soluble in chloroform or hot linseed-oil. A quickly drying varnish is prepared in the following manner:

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* Chem. Ztg., 1897, p. 691.
† Zeitschr. f. angew. Chemie, 1896, p. 531.

2 or 3 kilos of the preparation together with 5 kilos of linseed-oil are heated to about 150° C. and continually stirred until the whole presents a uniformly melted appearanc, or until it is dissolved. This solution is then at once added to 95 kilos of linseed-oil previously heated to 120° C. and uniformly distributed by stirring. The result should be a clear light colored varnish.

**3. Resinate of Lead-Manganese**, fused.—This preparation is of a brownish-black color and is supplied in rosin-like lumps. It should be soluble in chloroform or hot linseed-oil.

The varnish or lacquer is prepared in precisely the same manner as the mixture described under (2).

The above named three preparations form excellent light-colored and hard drying varnishes and are, by preference, employed for the preparation of lacquers, whereas the subjoined linseed-oil preparations are more properly intended for the preparation of oil varnishes.

**4. Linoleate of Manganese**, fused.—This preparation forms a dark brown plaster-like mass which should possess the highest possible degree of solubility in chloroform and hot linseed-oil. The preparation rapidly oxidizes at its surface and the oxidized layer so formed constitutes an insoluble skin which protects, as it were, the lower layers from further oxidation. This layer or skin should be removed before use, as it does not dissolve in chloroform or linseed-oil. The preparation is supplied in tins so as to protect it as far as possible from oxidation and decomposition. When preparing varnish, the contents of a 1 kilo tin should be heated on a steam bath to about 100° C. and, after removing the hard skin from the tough melted mass, the contents of the tin should be added to 2 kilos of linseed-oil heated to 150° C. The preparation soon dissolves with the aid of stirring and should then be added to 98 kilos of linseed-oil heated to about 120° C., wherein it is made to dissolve by frequent stirring.

**5. Linoleate of Lead-Manganese**, fused.—This preparation forms a yellow-brown plaster-like mass similar to the preceding substance and is worked up into varnish and used in the same manner.

**6. Linoleate of Lead**, fused.—This preparation forms a brownish-yellow plaster-like mass which dissolves in chloroform or hot linseed-oil. It is treated in a similar manner as the preceding preparations, excepting that 3 kilos should be taken per 100 kilos of varnish. A particular feature of this preparation is its high proportion of soluble lead compound.

Fluid linseed-oil siccatives are prepared in the same manner as that applicable to the preparation of varnishes, excepting that only 15 to 20 kilos of linseed-oil should be used instead of 100 kilos. According to Weger, siccatives should satisfy the following requirements:

1. The siccative should not, or should only very slightly, darken the linseed-oil.

2. The siccative should neither cloud the oil nor form a sediment.

3. The siccative should cause the linseed-oil to dry quickly, at least in 12, better in 8 hours.

**Borate of Manganese** (commercially also known as Hardening powder, White siccative, Boron-siccative, Siccative powder, etc.), a white loose powder. Linseed-oil varnish is prepared in the following manner: 2 kilos of the preparation are carefully mixed and stirred with linseed oil, a quantity of 10 kilos is made up and the whole is heated to 200—220° C. In another boiler 1000 kilos are heated at the same time until bubbles are thrown up; the first mixture is then added to this, boiling is continued for half-an-hour and the contents of the boiler poured into the stock vessels.

**Resinate of zinc,**

**Resinate of lime,**

**Resinate of baryta**

are used in the manufacture of lacquers as substitutes for copal. They do not increase the drying properties of oils and are, accordingly, not adapted for the preparation of varnishes.

**Resinate of copper,**

**Palmitate of copper,**

**Stearate of copper,**

**Linoleate of copper**

are likewise devoid of drying properties, but they are added to certain varnishes so as to render them better adapted for painting ships and for protection from rust. [Merck's Report for 1899, p. 150.] *E. K.*

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## Botany and Pharmacognosy.

**Contribution to the Pharmacognosy of Official Strophanthus Seeds.**—P. E. F. Perrédès contributes an extensive monograph on the pharmacognosy of official strophanthus seed, in which he shows that every histological character upon which the identification of the different varieties of "Kombé" seeds has hitherto been based exists in seeds obtained from one and the same pod. Neither of the two London journals print the lengthy paper which is to appear in full in the Yearbook of Pharmacy.

[Chemist & Druggist, 57, p. 163.] *E. K.*

**Notes on Some Indian Drugs.**—W. Mair submits details concerning the more important unofficial drugs indigenous to British India and in actual use by native and European physicians. As worthy of more attention in England he mentions the dried herb of *Andrographis paniculata*, known as the "King of bitters"; *Belae fructus*, which though tried in Europe and found wanting, is claimed to be of "unquestionable value in diarrhœa"; *Ispaghula*, the seeds of *Plantago ovata*, an emolient; *kurchi*, the root of *Holarrhena antidysenterica*, a mild astringent, anti-dysenteric and febrifuge; mangosteen

rind from *Garcinia mangostana*, used like kino; the fruit of *Carica papaya*, the "value of which cannot be overestimated"; jumbul seeds from *Eugenia jambolana* used in diabetes; chaulmugra seeds from *Garcinia odorata*, the oil of which is used in eczema, etc.; and the leaves of *Adhatoda vascia* used in pulmonary affections. Details for galenical preparations are to appear in the Yearbook. [Pharm. Journ., 65, p. 95; C. & D., 57, p. 169.] *E. K.*

## Practical Pharmacy.

**British Guiana Copaiba.**—E. W. Bell has examined a specimen of British Guiana copaiba, which appears to respond to all the characters and tests of the British Pharmacopoeia, except as regards the optical rotation of the volatile oil, and, in that respect, the B. P. monograph is supposed to be in error. The official tests for copaiba are criticised generally, and it is suggested that there should be a definite method for obtaining the percentage of oil, preferably by evaporation at about 100° C.; it is also suggested that the rotation figures for the volatile oil should be lowered, that titration of the oleo-resin be introduced and a resin-factor added.

[Pharm. Journ., 65, p. 98; C. & D., 57, p. 166.] *E. K.*

**Some Pharmaceutical Tinctures.**—J. C. McWalter gives the results of numerous determinations of the specific gravity of tinctures, and of the weights of residues left after evaporation of known volumes of such preparations. The latter show much greater variation than the specific gravities, and it is suggested that official standards for residues would be of but little use on account of the very wide limits that must be allowed.

[Pharm. Journ., 65, p. 85; C. & D., 57, p. 159.] *E. K.*

**Phenol Suppositories.**—F. R. Dudderidge deals with the difficulty experienced in removing phenol suppositories from the mould in hot weather. He finds that the presence of white beeswax tends to affect the physical consistence of the suppositories as well as to raise the melting point. Omitting the wax, he was able to prepare much more satisfactory articles, and it is suggested that the official formula should be modified accordingly.

[Pharm. Journ., 65, p. 85; C. & D., 57, p. 167.] *E. K.*

**Notes on Opium, Olive Oil and Saccharin.**—E. Dowzard confirms the view that the official standard for opium is too low, and suggests that the specific gravity of olive oil, as stated in the B. P., should be altered. He also describes a simple method, depending upon solubility of the compound in acetone, for distinguishing between different qualities of saccharin.

[Pharm. Journ., 65, p. 99; C. & D., 57, p. 168.] *E. K.*

**The Recovery of Menthol.**—A. W. Gerrard finds that waste menthol can be economically recovered in a pure state by crystallization from ether, better than by sublimation. [Chemist & Druggist, 57, p. 177.] *E. K.*

**Note on Liquor Ferri Pe chloride.** — T. Tyrer and A. Levy think it is probable that manufacturers do not make solutions of ferric chloride according to the method described in the Pharmacopoeia, and they confirm the statement that commercial samples of the strong solution cannot be obtained of specific gravity 1.42. The paper contains numerous analytical details. [Pharm. Journ., 65, p. 106; C. & D., 57, p. 163.] *E. K.*

**Examination of Commercial Samples of Liquor Ferri Phosphatis cum Quinina et Strychnina.** — H. J. Henderson finds that it is impossible to obtain a very concentrated solution from which the official representative of Easton's syrup can be properly prepared, and he gives the results of the examination of several samples of such concentrated solutions as are on the market. Only three out of ten contained the theoretically correct amount of alkaloid, and all which contained more than four percent appeared to have been prepared with quinine and hydrochloride. One contained glycerin, and all the results tend to prove that it is impossible to prepare a *liquor ferri phosphatis cum quinina et strychnina*, one volume of which, when diluted with three volumes of simple syrup, shall represent the official *syrupus ferri phosphatis cum quinina et strychnina.*

[Pharm. Journ., 65, p. 96; C. & D., 57, p. 174.] *E. K.*

**Asafetida Praeparata.** — H. W. Jones has been able to purify asafetida by a method of precipitation, which eliminates the gummy portion of the crude drug without causing any great loss of volatile oil, the asafetida being exhausted with 90 percent alcohol and the solution poured into faintly acidulated water. Compare Prof. Lloyd's detailed article on this subject in this journal, vol. 14, p. 54.

[Pharm. Journ., 54, p. 94; C. & D., 57, p. 173.] *E. K.*

**The British Pharmacopoeia as a Standard for Articles of Commerce.** — D. B. Dott is of opinion that, although the British Pharmacopoeia is admittedly the standard according to which pharmacists are bound to prepare all medicines which are official, the medicines must only be regarded as being of official standard when they are dispensed to the order of a physician, or where the conditions and circumstances of sale imply that the medicines are of that standard. He also traverses the idea that it should be considered possible to prove the presence of the full amount of any ingredient ordered in the B. P. formula for a given preparation, some time after that preparation has been made. Examples are given of a few confused interpretations of the Pharmacopoeia regarded as a standard, and it is suggested that a more intelligent and reasonable interpretation of existing laws is required.

[Pharm. Journ., 65, p. 94; C. & D., 57, p. 176.] *E. K.*

# SUPPLEMENT.

## Colleges and Universities.

The following paragraphs and pages give a brief account of the changes in the personell and courses also in the equipment of the various schools and colleges of pharmacy of this country. As a matter of convenience to the reader the arrangement is alphabetical according to states.

**Alabama.** Like a number of other states, Alabama has two state institutions, one called the University of Alabama, the other the Alabama Polytechnic Institute.

The former includes an Academic Department, a Law Department at Tuscaloosa, and has affiliated with it the Medical College of Alabama at Mobile, which includes a Department of Pharmacy. The pharmaceutical representative of the faculty is Dr. Chas. A. Mohr. Course begins Oct. 8.

The latter is the state college for the benefit of agriculture and the mechanic arts, and is located at Auburn. This institution offers a two-years' and a four-years' course. The Department of Pharmacy is closely affiliated with the other departments with Prof. E. R. Miller as Professor of Pharmacy. Mr. E. M. Mason has been elected Assistant in Pharmacy for the next session.

**California.** The California College of Pharmacy is one of the affiliated institutions in San Francisco of the University of California located principally in Berkeley with the Lick Observatory at Mount Hamilton. The twenty-ninth session began Aug. 27. Prof. W. M. Searby is Secretary and Dean. The following changes are reported: Benjamin Ide Wheeler, Ph. D., LLD., President of the University, vice Martin Kellog, resigned. Dr. A. A. D'Ancona, Lecturer on Physiology, vice Dr. C. Hadley Carlson, resigned. R. G. Shoults, Ph. G., Ph. C., Assistant in the Pharmaceutical Laboratory, vice J. S. Warren, resigned on account of ill health.

The College of Physicians and Surgeons, also of San Francisco, has a Dept. of Pharm., which enters upon its third course Nov. 26. The following appointments are reported as changes: P. A. Dubois, Ph. G., as Professor of Pharmacy; J. F. Dillon, A. M., M. D., as Professor of Materia Medica; C. H. Tuppmann, Ph. G., M. D., as Adjunct to chair of Pharmacy; T. W. Connolly, Ph. G., as Asst. to chair of Pharmacy; F. H. Zumwalt, Ph. G. as Asst. to chair of Botany; W. J. Jackson, Ph. G., M. D., as Professor of Physiology, Toxicology and Therapeutics.

**Canada.** The Montreal College of Pharmacy opens its thirty-third session Oct. 1. Lectures are given in both English and French. E. Muir, Secy. Changes not specially reported.

The twenty-first session of the Ontario College of Pharmacy, affiliated with the University of Toronto, begins Sept. 6. No changes reported.

The **District of Columbia** has two colleges of pharmacy, viz., Howard Univ. Dept. of Pharm. for colored people, and the National College

of Pharmacy. The former opens Oct. 1; the latter its twenty-ninth session, Sept. 24. Neither college reports any changes for next year.

**Georgia.** The Atlanta College of Pharmacy, Dr. Geo. F. Payne, Dean, begins its tenth session Oct. 1. No changes reported.

**Illinois.** The Chicago College of Pharmacy and the Illinois College of Pharmacy, both at Chicago, are affiliated, the former with the University of Illinois located at Champagne, the latter with Northwestern University at Evanston. Neither institution reports any very marked changes this year. Mr. B. C. Rounds takes the place of Mr. W. A. Jungk as Assistant in Chemistry at the older institution; both institutions will give special courses in business training.

**Indiana** has also two state institutions of which Purdue University, the state institute of technology, is provided with a Department of Pharmacy, and gives a two- and a four-years' course, No changes are reported.

Notre Dame also reports no changes. The Northern Indiana Normal School has changed its name to Valparaiso College.

**Iowa.** Neither the Departments of Pharmacy of the State University at Iowa City, nor of Drake University at Des Moines had reported at the time of writing.

The Highland Park College of Pharmacy at Des Moines begins its first quarter Sept. 4.

**Kansas.** The next academic year of the State University begins Sept. 5, when the new Chemical Building which is to house the Chemical and Pharmaceutical Departments is expected to be ready. Three courses of two, three and four years respectively are offered. Prof. Geo. Wagner who resigned will be succeeded by Mr. S. D. Havenhill, Ph. C., Ph. M., as Assistant Professor of Pharmacy. Mr. H. P. Cady has been made Assistant Professor of Chemistry.

**Kentucky.** The thirtieth session of the Louisville College of Pharmacy begins Oct. 1. The extension of the course from two to three years is under discussion, but will not be made for next year.

**Louisiana.** Tulane University continues its pharmaceutical instruction in the Medical Department.

**Maine.** The University of Maine at Orono begins its academic year 1900—01 Sept. 17. Offers two courses in pharmacy of two and four years respectively.

**Maryland.** The Maryland College of Pharmacy begins instruction Oct. 2. Mr. Henry P. Hynson, Ph. G., has been made Professor of Dispensing and Commercial Pharmacy. The former Instructors have been advanced to associate professorships, viz., Chas. Schmidt, Ph. G., to Assoc. Prof. of Pharmacy, and John P. Piquet, Ph. G., to Assoc. Prof. of Botany and Pharmacognosy. The one degree conferred will hereafter be Doctor of Pharmacy. A dispensary has been added to the equipment. This is to afford opportunity not only for practice in dispensing but also for commercial training. Assaying of vegetable drugs has also been added to the course in Pharmaceutical Manipulations.

**Massachusetts.** The Massachusetts College of Pharmacy begins its work Sept. 19. No changes have been made in the curriculum.

Mr. Frederick S. Schmidt, Ph. G., M. D., has been appointed Instructor in General and Pharmaceutical Chemistry in place of Dr. E. P. Worth, resigned. Improvements are being made in the lecture hall and in the microscopical and pharmaceutical laboratories.

**Michigan.** The first semester at the State University begins Sept. 25.

In the course of Lectures on Chosen Subjects several non-resident lecturers will take a part. Instructor P. F. Trowbridge, who studied under Professor Ernst Schmidt at the University of Marburg in 1898—99, takes charge of the course in Organic Analysis and Pharmaceutical Assaying. This leaves Professor Gomberg to devote his time to synthetical organic chemistry. Dr. Paul Murril, who held the Stearns' Fellowship last year, has accepted a chair in chemistry in the State College of Alabama. His successor will be appointed this month. Dr. H. M. Gordin has accepted a position in a research laboratory of the Merrell Chemical Company, of Cincinnati, leaving Ann Arbor for a time, to the regret of the faculty and the students. For the class in Pharmacology, D. Van Naten succeeds Dr. Wallace, who has accepted a position in this branch in another university.

COURSES INTRODUCED IN 1900—01.

1. A Graduate Year in Pharmacology Bacteriology, and Physiological Chemistry. Graduates of this School are admitted to these studies, and upon completion of satisfactory work to the extent of a college year a formal certificate or diploma is granted by the Faculty.

2. Chosen Subjects. Lectures once a week, in the Second Semester. One hour. Special lecturers, resident and non-resident. Pharmaceutical Economics; the avenues of the drug trade in the United States and her new possessions; sources of supply of raw and refined chemicals; drug plantations; the organizations of pharmacists, the literature of pharmacy, and any professional topic of the time.

Detroit Medical College: The eleventh annual session of the Department of Pharmacy will open Sept. 26. The course was lengthened last year and is strengthened this year by the addition of a course in bacteriology.

**Minnesota.** The College of Pharmacy of the State University begins its work Sept. 26. There will be no changes in the personnel and only slight changes in the curriculum. The laboratory course in organic chemistry will be somewhat abridged in order that the course in dispensing may be augmented.

**Missouri.** The St. Louis College of Pharmacy begins its fifth annual session Oct. 1, the Kansas City College of Pharmacy Sept. 21. Neither institution report any changes.

**North Carolina.** The University of North Carolina at Chapel Hill has a Department of Pharmacy, but no information was received.

The Department of Pharmacy of Shaw University (colored) at Raleigh opens Sept. 29. No changes reported.

**Ohio.** The Department of Pharmacy of the Ohio Normal University at Ada opens Aug. 14.

The Cincinnati College of Pharmacy does not report any changes for next year.

The Cleveland College of Pharmacy opens its session Sept. 10 in its new quarters, Professor V. Arny returns from his leave of absence. Professor R. A. Hatcher, a Ph. G. of the Phila. Coll. of Pharm. and an M. D. of Tulane Univ., who relieved Prof. Arny last winter, has been appointed Professor of Materia Medica and Microscopy. In addition to the regular instruction, courses in commercial practice and pharmaceutical bibliography are contemplated.

From the State University at Columbus no advice as to changes was received, neither from the National Normal University Dept. of Pharm. at Lebanon.

Scio College expects to erect a new building for its Dept. of Pharm. in the near future and to make extensive improvements both in courses of study and equipment.

**New Jersey.** The New Jersey College of Pharmacy is located at Newark. No information received.

**New York.** The Albany College of Pharmacy begins its "nineteenth course of lectures" Oct. 2. No changes reported.

The Brooklyn College of Pharmacy opens its doors Sept. 21. For the next session it offers a graduate course of one year leading to the degree of Doctor of Pharmacy.

The Buffalo College of Pharmacy begins work Oct. 2. Dr. E. J. Kiepe, Ph. G., has been advanced from Instructor in Materia Medica to a full professorship; Dr. A. P. Syl, M. S., has been appointed Instructor in Chemistry; and Dr. W. H. Mosher, Phar. M., Instructor in Pharmacal Assaying. Arrangements have also been made which, it is hoped, will stimulate students to do advanced work leading to higher degrees than that of Ph. G. now given.

College of Pharmacy of the City of New York. No information as to changes received.

**Oregon.** The Agricultural College gives instruction in pharmacy. Mr. A. L. Knisely, M. S., has been elected Professor of Chemistry in place of Prof. G. W. Shaw, resigned.

**Pennsylvania.** Philadelphia College of Pharmacy. Mr. E. F. Cook, P. D., is to take the place of Mr. Frank G. Ryan as Asst. Director of the Pharmaceutical Laboratory, and Mr. Chas. H. La Wall has been appointed Instructor in Pharmacy. The course in commercial training given by Prof. Ryan last year is to be continued, an instructor yet to be appointed. The next course begins Oct. 1.

The Medico-Chirurgical College of Philadelphia begins its next session Oct. 1. All of the lectures and laboratory work will hereafter be given during the day instead of during the evening as heretofore.

The Pittsburg College of Pharmacy also resumes work Oct. 1. No changes.

**South Carolina.** The Medical College of the State of South Carolina has a Department of Pharmacy which resumes work Oct. 1. No changes.

S. C. College of Pharmacy at Charleston. No report.

**South Dakota.** The S. D. Agricultural College at Brookings has a Dept. of Pharmacy which opens Sept. 27. Arrangements have been made whereby the pharmacy graduates may take an additional course and receive the degree of Bachelor of Science.

**Tennessee.** Central Tennessee College at Nashville for colored people opens its Dept. of Pharm. Sept. 5. No changes.

Vanderbilt University, also at Nashville, begins its first term Sept. 19. Prof. Safford, formerly Dean of the pharmaceutical faculty, has been made Emeritus Professor of Mineralogy. Dr. J. T. McGill, formerly Adjunct Professor of Chemistry and Secretary of the pharm. faculty, has been made Dean and full Professor of Chemistry. Mr. A. S. Smith has been appointed Assistant in Chemistry in place of W. H. Simmons, and Mr. B. B. Kerr, Asst. in Pharmacy in place of L. E. Mayfield. A course in Current Pharmaceutical Literature is offered.

From the University of Tennessee at Knoxville no report was received at the time of writing.

**Texas.** Neither the University of Texas nor the Southwestern School of Pharmacy, both at Dallas, report any changes. Both institutions resume work Oct. 1.

**Virginia.** The University College of Medicine at Richmond opens Oct. 2. Dr. Geo. E. Barksdale has been elected Professor of Botany and Materia Medica and Lecturer on Pharmacognosy in place of Prof. A. T. Snellings. Dr. R. W. Miller, M. D., Ph. G., formerly of Cambridge, Pa., has been elected Prof. of Pharm. Chemistry.

**Washington.** Neither the State University at Seattle nor the Agricultural College at Pullman seem to have made any changes in their respective departments.

**Wisconsin.** The fall semester at the State University begins Sept. 26. Dr. R. Fischer, formerly Instructor in Practical Pharmacy, who studied abroad for two years at the Universities of Berlin and Marburg, has been appointed Asst. Professor of Practical Pharmacy. Mr. W. O. Richtmann, who filled Mr. Fischer's place during the latter's absence, has been appointed Instructor in Pharmacognosy, and Dr. Boyce lecturer in the same department.

The course in pharmacognosy has been modified somewhat, more stress to be laid on the chemical constituents of drugs than heretofore. The botanical laboratory work in pharmacognosy will be supplemented by the chemical study in the laboratory of representatives of the principal plant constituents.

Provision has been made for an electric motor with which to run pharmaceutical machinery in the laboratory for practical pharmacy.

In the General Chemical Dept., Prof. L. Kahlenberg has been advanced to a full professorship and another Asst. Professor of Chemistry has been appointed. Mr. Schlundt, some years ago a fellow, has been appointed instructor in the same department.

A School of Commerce has been established at the University which will enable pharmacy students to elect such studies of a commercial nature as they may desire.

The Milwaukee Medical College has established a Dept. of Pharmacy with R. E. W. Sommer as Dean and Prof. of Chemistry and Physics; A. E. Mieding, Ph. G., as Prof. of Pharmacy; H. F. W. Roemheld as Lecturer on Pharmacognosy and Botany. Instruction will also be given by members of the medical staff and a number of assistants.

## Professional.

**Legislation Against Medical Discovery.***—DEAR SIR: I observe that a new bill on the subject of vivisection has been introduced into the Senate, Bill No. 34. This bill is a slight improvement on its predecessor, but it is still very objectionable. I beg leave to state very briefly the objection to all such legislation.

1. To interfere with or retard the progress of medical discovery is an inhuman thing. Within fifteen years medical research has made rapid progress, almost exclusively through the use of the lower animals, and what such research has done for the diagnosis and treatment of diphtheria it can probably do in time for tuberculosis, erysipelis, cerebro-spinal meningitis and cancer, to name only four horrible scourges of mankind which are known to be of germ origin.

2. The human race makes use of animals without the smallest compunctions as articles of food and as laborers. It kills them, confines them, gelds them and interferes in all manner of ways with their natural lives. The liberty we take with the animal creation in using utterly insignificant numbers of them for scientific researches is infinitesimal compared with the other liberties we take with animals, and it is that use of animals from which the human race has most to hope.

3. The few medical investigators can not, probably, be supervised or inspected or controlled by any of the ordinary processes of Government supervision. Neither can they properly be licensed, because there is no competent supervising or licensing body. The Government may properly license a plumber, because it can provide the proper examination boards for plumbers; it can properly license young men to practice medicine, because it can provide the proper examination boards for that profession, and these boards can testify to the fitness of candidates; but the Government cannot provide any board of officials competent to testify to the fitness of the medical investigator.

4. The advocates of anti-vivisection laws consider themselves more humane and merciful than the opponents of such laws. To my thinking these unthinking advocates are really cruel to their own race. How many cats or guinea pigs would you or I sacrifice to save the life of our child or to win a chance of saving the life of our child? The diphtheria-antitoxin has already saved the lives of many thousands of human beings, yet it is produced through a moderate amount of inconvenience and suffering inflicted on horses and through the sacrifice of a moderate number of guinea pigs. Who are the merciful people—the few physicians who superintend the making of the antitoxin and make sure of its quality, or the people who cry out against the infliction of any suffering on animals on behalf of mankind?

It is, of course, possible to legislate against an improper use of vivisection. For instance, it should not be allowed in secondary schools or before college classes for purposes of demonstration only; but any attempt to interfere with the necessary

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* An open letter from President Eliot of Harvard University to the Chairman of the Senate Committee on the District of Columbia. From Popular Science Monthly.

processes of medical investigation is, in my judgment, in the highest degree inexpedient, and is fundamentally inhuman.

Yours very truly,

C. W. Eliot.

Hon. James McMillan.

**British Pharmaceutical Conference.**

Abstracts of the following papers presented will be found on the pages referred to under Monthly Review of this number.

W. C. Allen & E. T. Brewis: — Almond oil and its substitutes p. 426.

E. W. Bell: — British Guiana copaiba, p. 431.

—— Copaiba: its assay and tests.

F. C. J. Bird: — Laboratory notes, p. 423.

D. B. Dott: — The British Pharmacopoeia as a standard for articles of commerce, p. 432.

E. Dowzard: — Notes on opium, olive oil and saccharin, p. 431.

—— Viscosity of essential oils, p. 427.

F. R. Dudderidge: — Phenol suppositories, p. 431.

E. H. Farr & R. Wright:—Critical note on the official process for the determination of strychnine in galenical preparations of nux vomica, p. 423.

A. W. Gerrard: — The recovery of menthol, p. 431.

H. J. Henderson:—Examination of commercial samples of *Liquor ferri phosphatis cum quinina et strychnina*, p. 432.

H. W. Jones: — Asafetida praeparata, p. 432.

W. Mair:—Notes on some Indian drugs, p. 430.

J. C. McWalter: — Some pharmaceutical tinctures, p. 431.

C. G. Moor & M. Priest: — Ash in drugs.

E. J. Parry: — Report on sandalwood oil, p. 421.

P. E. F. Perrédès: — Contribution to the pharmacognosy of official strophanthus seeds, p. 430.

F. B. Power:—Some observations and suggestions relating to the chemistry of the British Pharmacopoeia, p. 425.

—— Mercurous iodide, p. 427.

F. Shedden: — The composition of berberine phosphate, p. 423.

J. F. Tocher: —New apparatus for the estimation of chlorine and nitrogen, p. 427.

T. Tyrer & A. Levy: — Note on *Liquor ferri perchloridi*, p. 432.

—— Determination of correct melting points, p. 426.

C. T. Tyrer & A. Wertheimer:— Turpentine oil and terebene p. 426.

T. H. Wardleworth: — The pharmaceutical plants of Jamaica.

## Commercial.

Pamphlets Received:—

Gehe & Co.—Dresden-Neustadt. 1. Handels-Bericht. April 1900; 2. Verzeichniss neuerer Heilmittel. April 1900.

Schering & Glatz—New York. 1. Urotropin, Pamphlet, pp. 39; 2. Collargolum and Unguentum Credé; 3. Orphol, Pamphlet, pp. 4; 4. Creosotal, Duotal, Pamphlet, pp. 12; 5. Xeroform, Pamphlet, pp. 4; 6. Hydrgolum, Pamphlet, pp. 4; 7. Beta Eucain, Pamphlet, pp. 24; 8. Anusol Suppositories, Pamphlet, pp. 4.

W. R. Warner & Co.—Philadelphia. 1. Granular Effervescent salts, pp. 16; 2. Pil. Cascara Cathartic, pp. 12; 3. The Acid Diathesis, pp. 14; 4. Tono Sumbul Cordial, pp. 12; 5. Ingluvin, Pamphlet, pp. 12.

Book-mark of the Pharmaceutical Society of Switzerland.

# Pharmaceutical Review.

VOLUME 18. OCTOBER, 1900. NUMBER 10.

## Editorial.

Shortly after the meeting of the **Eighth Decennial Convention for Revising the United States Pharmacopœia,** we called attention to the inadequate geographical representation of its membership in the following words:

"The new constitution admits only delegates from incorporated state associations—not local associations—and incorporated colleges. This is a great improvement over the past regulations, yet it does not procure representation which is geographically adequate. Unless the writer is greatly mistaken, all of the country west of the Mississippi, omitting the City of St. Louis, was represented by as few as five delegates. Several states of the old Northwest were none too well represented, and more than one southern state not at all. It is certainly desirable to have as large a representation as possible at these decennial conventions. It may, therefore, not be wise to reduce numerically the influence of the Eastern states which have the great advantage of nearness to Washington. It may be well, however, to carefully consider the question of paying mileage to two representatives, one medical and one pharmaceutical, from each state in order that the large and growing West may be represented more adequately in the future. It is not necessary to wait for the sitting of the next Convention to bring about such reform. If the next edition of the Pharmacopœia shall be as successful financially as the seventh, it ought to be within the power of the Council to vote the necessary funds for this purpose. The question of better geographical representation is one that deserves the careful consideration of all concerned, particularly of the western state pharmaceutical and medical associations."

Under the captious title "Three of Them are Druggists," the editor of The New Idea calls attention to his analysis, according to callings,

of the members of the Committee of Revision. The representation accorded the pharmaceutical practitioner will appear more favorable if it is born in mind that the present Council is an outgrowth of the former Committee of Revision, that the members of this branch were elected primarily for their business experience, and that the retail druggist is well represented in the Council. Not only is election of retail druggists into the Council in harmony with the idea of specialization, but the election of college men on the Revision Committee is likewise in harmony with the same idea and need disturb no one. The mere facts, however, pointed out in the editorial referred to should receive our careful consideration and are herewith quoted:—

"The personnel of the Committee on Revision of the U. S. P., elected at the last convention, is interesting and furnishes some food for thought.

Twenty-two of the twenty-six members are teachers in pharmaceutical or medical colleges; three are connected with pharmaceutical manufacturing houses, one is in charge of the pharmacy department of public charities in New York.

Of the twenty-two teachers, fifteen are in colleges of pharmacy. No college has more than one representative, save Philadelphia, which has three, and the medical department of the University of Pennsylvania, which has two.

"The geographical distribution is still more unequal. Philadelphia heads the list with six members—nearly one-fourth of the entire committee. New York and Chicago follow with four each, and Baltimore with three, making seventeen in these four cities, or two-thirds of the entire committee. The following have one representative each on the committee: Ann Arbor, Atlanta, Boston, Buffalo, Detroit, Lawrence (Kans.), Louisville, Madison (Wis.), and St. Louis. Thirty-four states are without representation.

"Only three members are actively engaged in the retail drug business at the present time. Nine of the present committee were on the last committee of revision."

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Apropos of the revision of our own pharmacopœia, it may be opportune to call attention to the criticism passed by the editor of the Pharmaceutische Zeitung on the new fourth edition of the **German Pharmacopœia** which has just made its appearance. The critic fully appreciates the value and importance of the revision. His

criticism is by no means unfriendly, although he writes without fear or favor. The following points deserve to be selected and may be of some use to us in our present work of revision.

1. A pharmaceutical codex is not the kind of book that is wanted. The pharmacopœia must be primarily a scientific treatise and as such, decennial revision and even quinquennial revision will no longer satisfy the pharmaceutical and medical public.

2. The new edition, though eminently scientific, does not meet the practical demands of to-day's medical and pharmaceutical practitioner. Of the three or four thousand new remedies (galenical as well as chemical) introduced, according to Harnack, into materia medica during the last decade, only twenty-five have been admitted into the new fourth edition. The 628 articles of the new edition (the first contained 906, the second 600, the third 592), although a slight increase over the previous one, are altogether out of proportion with the number of drugs and medicines carried by wholesale firms and in actual use.

3. The new tests will drive scientific pharmacy still more out of the apothecary shop and into the large manufacturing establishments and scientific institutions. Time, cost of material to be examined as well as of reagents, and lack of sufficient education on the part of apprentices and clerks will render it practically impossible to comply with the requirements of the laws regulating the practice of pharmacy and the inspection of pharmacies.

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It will be seen from the above summary that the tendencies in Germany and the United States are much the same. Both countries have restricted the number of articles in their pharmacopœias to such an extent, that both pharmacist and physician seldom find in the book what they want. Authentic information concerning the old standard remedies is certainly important, but it is needed much more of new ones.

Both countries have created scientific treatises that are a credit to them. Whereas the discrepancy between the high scientific standard of our Pharmacopœia and the lack of education of the average practitioner has not been generally felt, the more strict government control in Germany makes the difference between the new pharmacopœial standards and requirements and the want of university education and training of her apprentices and clerks a matter of keen interest.

The German apprentice and assistant is possibly not much better qualified than his American confrère to assay galenical preparations or to make an histological examination of a powdered drug. The developments that must follow in Germany in the near future will be carefully watched everywhere. It seems as though some changes were imminent if the laws are to be enforced.

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The **Swiss Apothecaries' Society** held its fifty-sixth annual meeting in Glarus, August 15 and 16. No business of international import was transacted. The only paper or semblance of a paper was presented by Mr. Jenny, who demonstrated the making of ten suppositories, evidently with a mould. As a matter of interest it may be mentioned that the society has a library of 1000 volumes, of which Professor Tschirch of Bern is librarian. A sum of $40.00 was allowed for library purposes. It evidently takes an enthusiast, rather than money, to build up a library of this kind. Last month we published a copy of the very neat book plate of this society.

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"The very worst place for a learned convention is a great city. The worst possible time for it is the middle of summer, and the worst imaginable condition for its success is the presence at the same time of a vast counter-attraction, which throws all the ordinary life of the place out of gear. All of these circumstances were combined," so an able reporter informs us, against one of the international congresses held at Paris. If the above statement is true, there is no reason why it should not apply to practically all of the international congresses held there. Many of the American learned societies now hold mid-winter meetings, at which the more serious work is accomplished, whereas the summer meetings are more and more partaking of the character of an annual outing. Both have their advantages and both will, no doubt, continue.

As to the **Ninth International Pharmaceutical Congress,** held at Paris August 2nd to 8th, the term international was as much misapplied as it was at Brussels in 1897 and at Chicago in 1893. Almost all of our state association meetings are as international as these congresses. So long, however, as practically all branches of learning are represented at these world's fair exhibitions of learning, it will be necessary for pharmacy to display itself. It may be some small satisfaction to pharmacists that the President of the ninth Paris Congress in his closing remarks commended his pharmaceutical

confrères for their diligence, whereas most members of other congresses spent their time on the exposition grounds or seeing the sights of the gay city.

In the Supplement of this number will be found a list of papers read and subjects discussed at three of the four sections of the Congress. The professional topics discussed may have been interesting to the participants in the debates, but they cannot be solved in this manner. The resolutions adopted will have but little influence even in the country in which the Congress was held and which furnished the large majority of votes. Their influence on other countries can at best be but very indirect and remote. The designation "international," viewed from this standpoint, must indeed be regarded a misnomer if not a farce, as more forcibly put by some critics.

The only transaction which may prove of direct international import is that pertaining to an international pharmacopœia. This child of sorrow was made to serve in large measure the *raison d'être* of previous international congresses and has thus far proven a flat failure. The only genuine advance made in this direction lies in the recognition of the impossibility of realizing it in the manner heretofore attempted. An international pharmacopœia is a dream that may well disturb the slumbers of speculative members of the profession. However, so far Great Britain has not seen its way to a pharmacopœia that would include her colonies, to say nothing of a closer affiliation with the United States. After a number of failures, the idea of an international pharmacopœia, satisfying all wants, has been dropped for some years. The necessity of making a beginning was recognized and the attempt was to have been made to secure an international pharmacopœia of potent remedies. The American Pharmaceutical Association even voted a considerable sum of money to secure the accomplishment of this end. After seven years of waiting we have not even seen a preliminary draft. The futility of these attempts will be better understood if the character of the congresses is looked into and if some attention is paid to the individuality of the members who constitute them. Most of them are good talkers rather than hard workers for an ideal cause.

In accordance with the suggestions recently made by Professor Tschirch of Bern, the differences in the composition and character of similar preparations found in the various pharmacopœias are to be tabulated. This compilation is to be sent to all commissions or

committees having in charge the revision of national standards, also to pharmaceutical and medical organizations. It is hoped that in this way similar preparations may in the course of time be made alike. It is also suggested that, under the titles of the more important preparations, the various pharmacopœias enumerate such other pharmacopœias as direct such preparation to be made of the same strength and according to the same method. In addition, the Belgian government is to be requested to invite the governments of other interested countries to send at least two official representatives to a pharmacopœial conference.

Whatever our opinion of the earlier attempts may be, let us hope for the sake of the reputation of pharmacy, that at least something will be done. After eight failures in this direction, we ought to have learned at last what is impossible and what may be practicable. It is much easier to discuss and adopt resolutions, as we know to our sorrow, but the present resolutions have an air of directness and practicability. Yet we must bear in mind that it may be easy enough for each country concerned to send two or more delegates, though there may not be a single government that will allow the conclusions of such a pharmacopœial conference to be binding upon its members. Indeed, in a country like our own the government has no hand in the making of our national standard. If reports are complete, the United States were not even mentioned among the countries supposed to be interested. And this in spite of the fact that the A. Ph. A. has voted a large sum of money in support of this beautiful dream. The United States were not represented on the floor, consequently forgotten.

We append a few criticisms of the two leading English journals.

"The International Congress of Pharmacy is now a thing of the past, and has been a success from the social point of view, but there has been very little of an international character about the work accomplished."

"The papers read at the Congress of Pharmacy in Paris were in many cases good, and in a few really excellent; but there was a good deal of compilation, and one would hardly describe them as being up to the standard of many of those read at the last meeting of the British Pharmaceutical Conference."

"The London Conference has been succeeded by an 'international' Congress, and that appears to have been about as futile an affair as could possibly be imagined."

# History of the Art of Distillation and of Distilling Apparatus.

Adapted and supplemented from "The Volatile Oils," by *Oswald Schreiner.*

## 1. History of Distillation up to the Eighteenth Century.

The history of the evolution of the art of distillation and distilling apparatus from the primitive *cucurbita*, the *alembic* and the *berchile* to the steam and vacuum apparatus and rectifying columns of our own time reveals the long and varied course which had to be followed in the construction of the apparatus used in our comparatively modern branches of industry in order to bring them to their present technical and scientific perfection.

Fire, which is so indispensable to these operations, was believed by the ancients to have been brought to earth by Prometheus from the realm of the gods, and was used in religious cults for the conversion of organic earthly matter to the spiritual immortal form. While it was worshiped by the oldest Persian tribes as a mighty power of the gods, the Chinese used it in earliest antiquity for the development of an industry, which, although primitive, was nevertheless wonderful. According to apocryphal writings the Indians early used, not only smelting furnaces and ovens, but also distilling furnaces. These have also been used in the long and well developed epoch of culture of the Egyptians.

From the time of the Arabians and through the entire middle ages the dominant desire of all investigaters was to transmute the common metals into gold, by means of the *lapis philosophorum* or philosopher's stone, and to resolve all earthly matter to spiritual or immortal forms through the *quinta essentia* or elixir of life. The attention of all investigators was primarily if not entirely directed toward the discovery of the one or the other, or perhaps both, of these principles. The vessels used in these operations are of interest as they are the forerunners of our present furnaces and stills. Smeltting and subliming furnaces were used in the search for the philosopher's stone, distilling vessels and furnaces in the search for the elixir of life. The last crowning hypothesis of these theoretical speculations was the doctrine of phlogiston, the death of which, at the close of the eigteenth century ended these wonderful teachings

and beliefs of the elementary nature of material forms, which had existed for thousands of years. From this point dates our modern science of chemistry together with the numerous industries, grown out of the technical application of its principles and those of allied sciences.

Fig. 1. Primitive apparatus for the distillation of cedar oil from oleoresin.

The first definite statement found in ancient writings which indicates a kind of primitive distillation, although probably not pictured until the middle ages, is the mention of the method for obtaining oil of cedar (πισσέλαιον) in the writings of Herodotus, Dioscorides and Pliny. This oil is said to have been obtained from the oleoresin by boiling with water in an open earthen kettle. The oil either collected at the surface of the liquid and was removed, or its vapors were condensed in layers of wool spread over sticks of wood laid crosswise on the kettle as in figure 1. The wool was replaced from time to time by fresh portions and the saturated wool expressed with the hands.

Authentic representations of the distilling vessels used by the Egyptians do not exist. Some of their forms of apparatus were undoubtedly adopted by the Arabians and improved by them. To the oldest known writings which give information on methods of distillation and distilling apparatus belong those of the Greek physician Dioscorides and of the Greek philosopher Zosimos.

In a manuscript Arabian translation of Dioscorides' Materia Medica in the library at

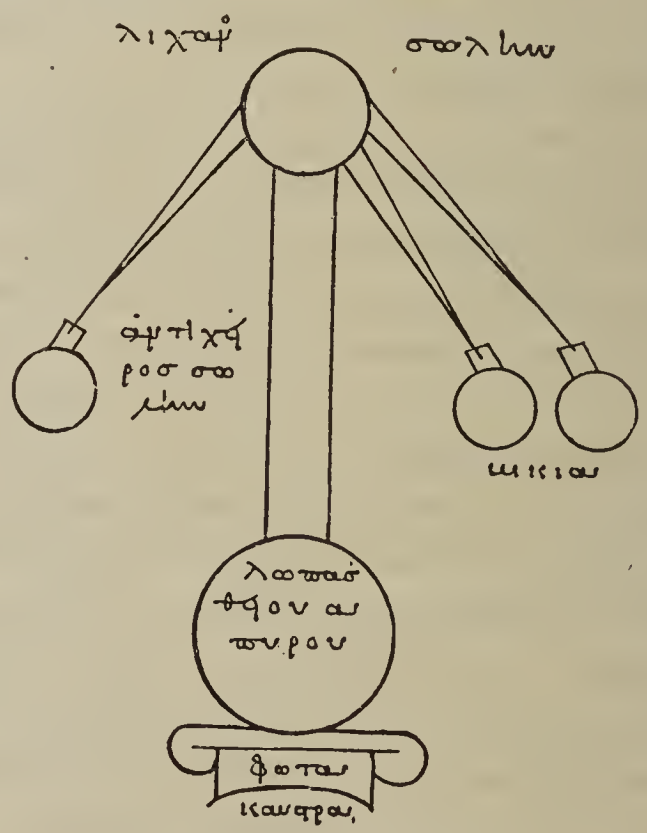

Fig. 2. Still with three receivers from the manuscript of St. Mark.

Leyden distilling ranges and apparatus are mentioned and described. These descriptions probably occur in the original Greek text. Among them are found the *cucurbita* and the *alembic.*

Figures 2 and 3 give an idea of the appearance of these primitive apparatus as found in the early manuscripts. Figure 2 is from the manuscript of Saint Mark (eleventh century) and represents a still with three receivers. Figure 3 is from manuscript 2327 (copied in 1478) in the National Library at Paris. It is a representation of two stills, with one and with three receivers, and two digestion vessels.

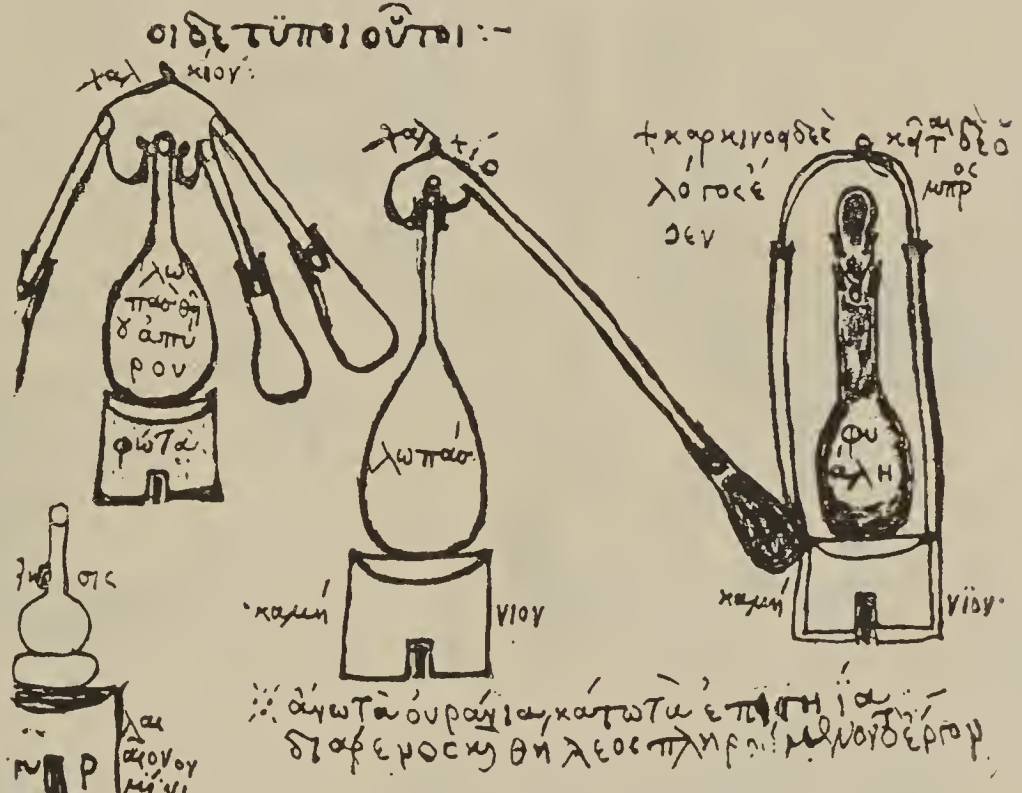

Fig. 3.
Stills and digestion vessels from manuscript 2327 Nat. Library, Paris

Fig. 4. The universe. Used in the 16. cent. to illustrate the principles of distillation.

Figure 4 is from one of the old distilling books and is supposed to represent the universe, "gantze Welt." The center is the earth, the outer ring the sun and other heavenly bodies, the intervening cloudy space is the atmosphere. The figure is used to illustrate the principles of distillation by comparison with the natural processes of the vaporization of water by the heat of the sun and other heavenly bodies and the subsequent condensation of the vapors and return to the earth in the form of rain, snow or hail.

Just as pictures have served as symbols in the oldest mythology, and as characters in the writings of the earliest peoples, the forms of animals were used by the ancients as prototypes in the making

of jewelry, and of all kinds of useful articles and apparatus. The same seems to have occurred in the preparation of primitive digestion and distilling vessels. Such pictorial representations have been carried over from the writings of Zosimos and probably also of others into the writings of the Arabians and from these into other alchemical works of the middle ages.

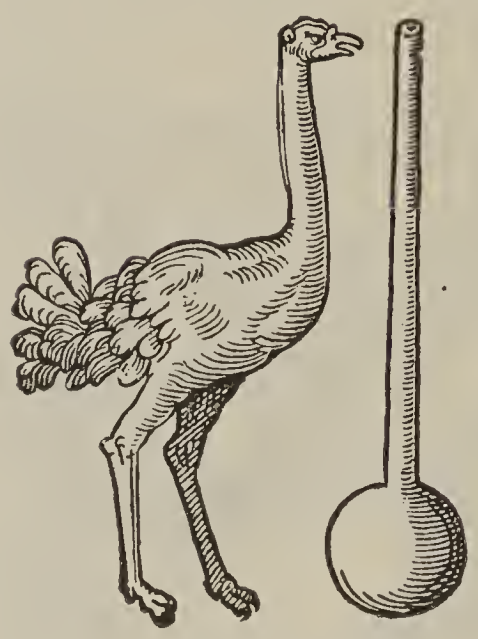

Fig. 5.

As prototype of a common flask the

Fig. 6.

Fig. 7.

Fig. 8.

Figs. 5 to 8. Allegorical representation of primitive distilling apparatus.

figure of an ostrich is given (fig. 5); as that of a retort a goose (fig. 6) or a pelican (fig. 7). The shape of a bear served for a still (*cucurbita*) and head (*alembicus*, fig. 8). An improved form of this simple distilling apparatus is found in the writings of Geber and Albucasis. Albucasis not only described glass distilling vessels but also those prepared of glazed earthenware (fig. 9) and a kind of fractional distillation for the purpose of a better condensation and separation of subtle spirits by placing several *alembices* on top of one another (fig. 10).

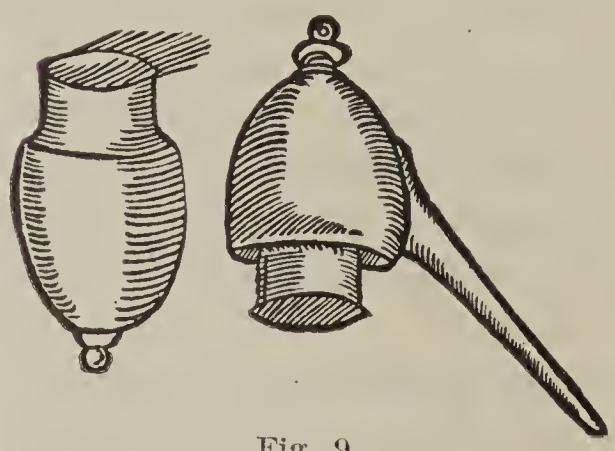

Fig. 9.
Still of glazed earthenware.

From the writings of Geber and Albucasis, also from those of the excellent physician and writer Rhases (El Râzi), it becomes apparent that the Arabians distinguished as early as the eighth century between distillation over open fire and from a water bath and ash bath. Geber described both methods in detail. Among the writings left by the Arabians the

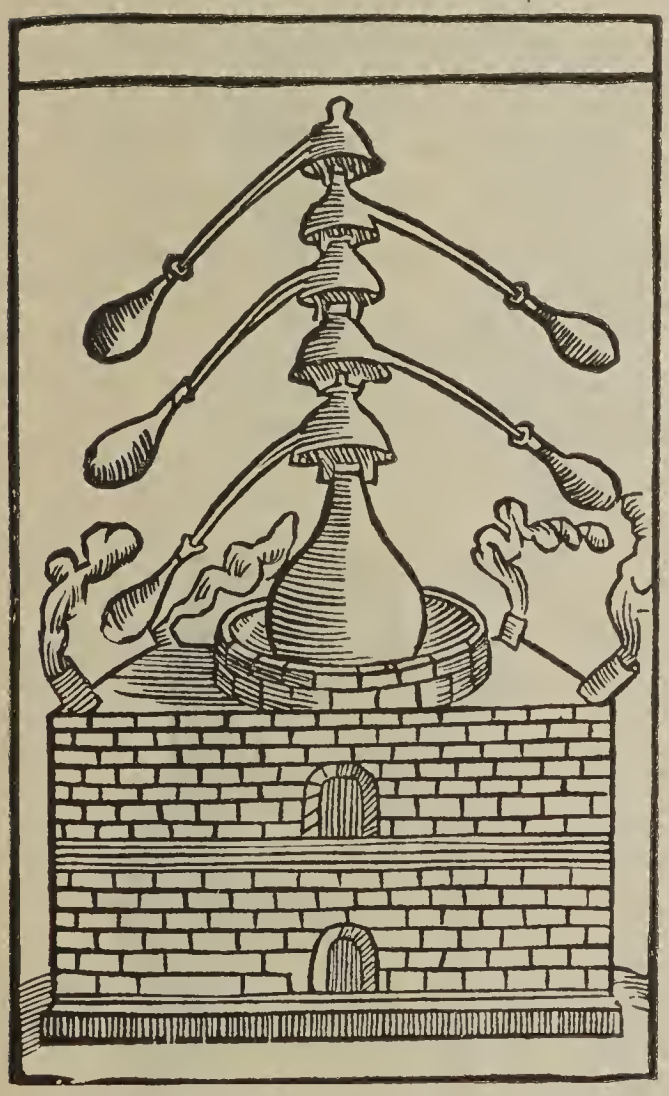

Fig. 10. Primitive still for fractional distillation.

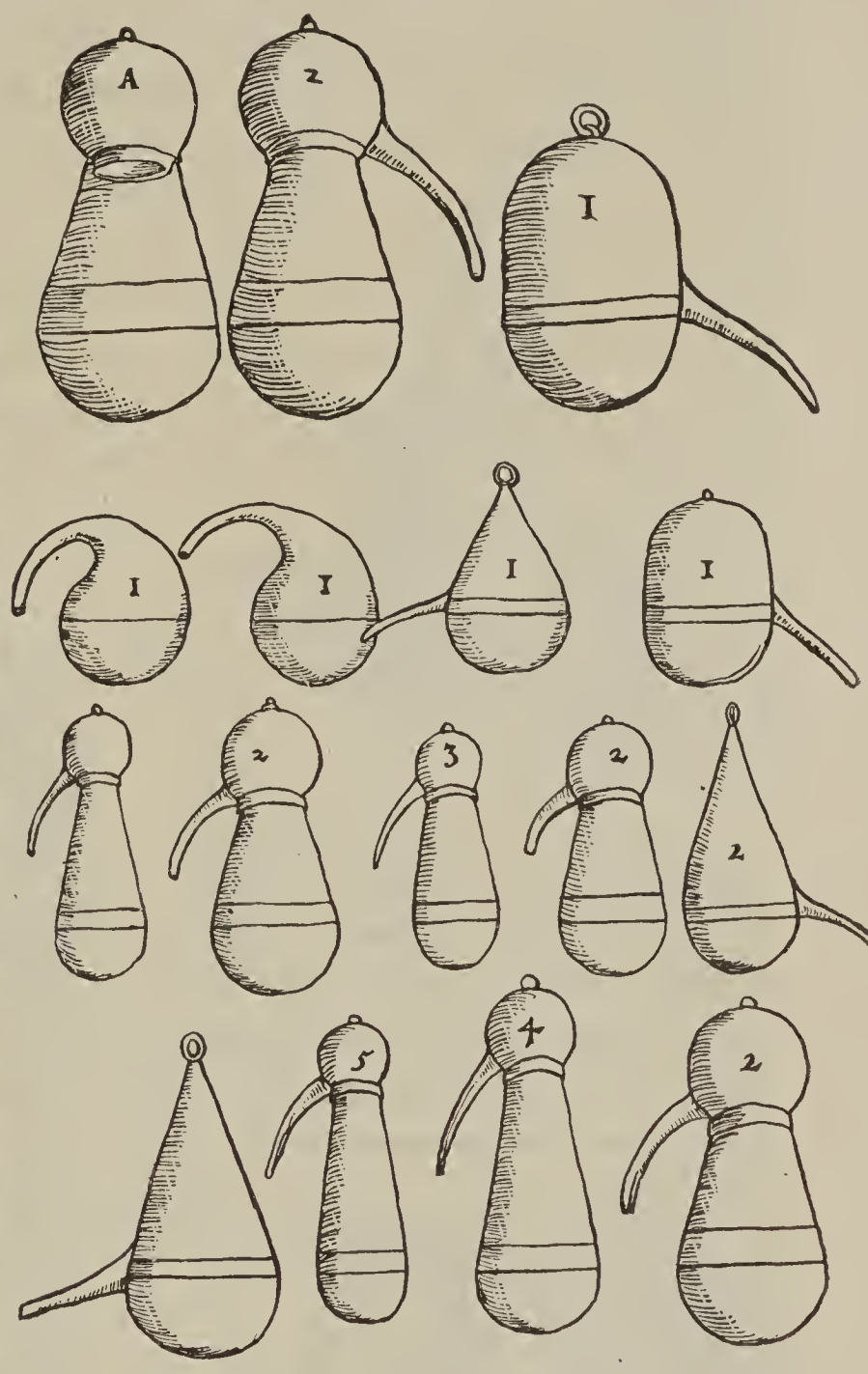


Fig. 11. Primitive distilling vessels.

work of Albucasis probably contains one of the first and most striking descriptions of the manner of distillation and of distilling apparatus.

Figure 11 will give an idea of the various shapes and sizes of the early distilling vessels used. They were usually made of glass, or of earthenware and sometimes of metal. The alembic was made so as to fit into the cucurbita, or body of the still and luted tightly to this with a cement called by the alchemists *lutum sapienti.* This

cement consisted of a mixture of clay, horse dung, brick dust, salt water, and white of egg. To prevent the breaking of the vessels by handling or heat, they are recommended to be put into a sack made of heavy cloth, if to be used in a water bath, but if to be used over a direct fire, they are to be covered with a mixture of clay, horse dung, and wine, together with some white of egg. Several layers of this mixture were to be applied to the vessel. If in spite of this precaution, a vessel cracked during a distillation, a cloth spread with minium, lime, flour, and white of egg, was laid on the crack. The cloth used was previously treated with salt water and white of egg and dried, to render it less inflammable. The shape and size of the vessel used depended upon the substance to be distilled. For volatile liquids a tall vessel was used, for the less volatile one with a low outlet tube was selected. A low retort was especially recommended for the distillation of turpentine which had been treated with spirits of wine to make it more volatile.

For the purpose of better condensation, Costaeus of Lodi, a physician and alchemist of Bologna, recommended that the beak of the alembic be cooled by water (figs. 12 and 13), also that

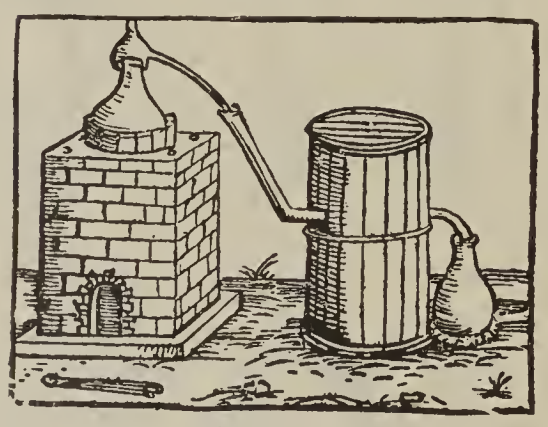

Fig. 12.

Fig. 13.

Figs. 12 & 13. Stills with water condensation.

the distillate be improved by the use of the water bath (*balneum Mariae*, fig. 14) and the sand bath (*balneum arenae*, fig. 15). The still in connection with the latter bath also illustrates an early attempt at fractional distillation. The helm was provided with two grooves, running around the interior, so as to separate the more volatile

portion which condensed in the upper part of the helm from the less volatile portion condensing lower down. These fractions were collected separately in receivers as shown.

The method of condensation of the vapors, already well known to the Arabians, of passing the straight or bent tube of the alembic,

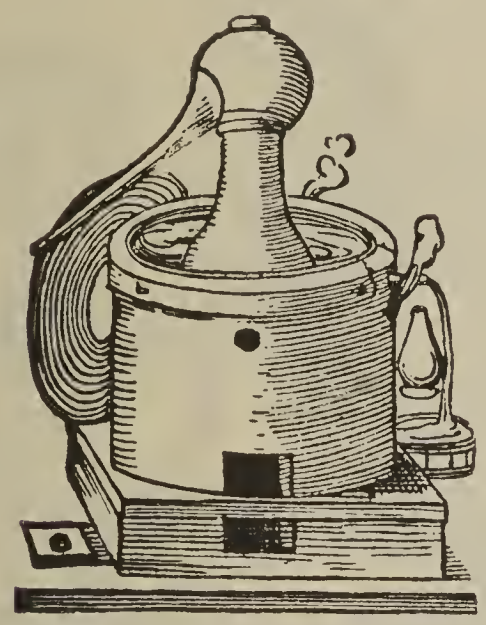

Fig. 14. Water bath and still.

Fig. 15. Sand bath and still.

or an elongation of the same wound into a spiral (wormtube, *serpentina*) through cold water was already in general use during the fourteenth century for the distillation of wine and fermented plant juices. As examples of such distilling apparatus and methods, "die mancherley Kühlungen der Teutschen und Welsche Weinbrenner" are described and illustrated in treatises on distillation of the first half of the sixteenth century, namely in those of Brunschwig, Ulstad, Ryff and Lonicer. In these a distilling apparatus constructed with considerable skill is described. The helm of the still and the outer condenser jacket were made of sheet copper. The form of the head-like expansion of the helm with the outer jacket, the lower open rim of which was tightly luted to the still, gave rise to the name of "Mohrenkopf". The condensation was effected by a continuous flow of cold water through the outer jacket (fig. 16).

In order to separate the *phlegma* or water from the spirit, the latter was slowly distilled several times with a helm, the mouth of which had been stopped with a sponge saturated with olive oil. The water was retained by the sponge, whereas the more volatile alcohol vapors passed through and were condensed in the helm and collected in the receiver.

The method of condensation derived from the Arabians was considered as the most perfect for the distillation of spirit of wine (*aqua vitae*). The illustration of this apparatus was selected for the title

Fig. 16. The "Mohrenkopf." First half of the sixteenth century.

page of the second volume of Brunschwig's Destillirbuch published in the year 1507 and is reproduced in figure 17. Where the two upright serpentine connecting tubes (*serpentinae*) between the retorts (*cucurbitae*) and the receivers (*receptacula*) cross each other they pass through a condensing tube filled with cold water. The cooling effect thus produced is not sufficient for the condensation of all the vapor. The worm acts, therefore, as a dephlegmator and increases the alcoholic strength of the distillate. This is emphasized correctly by Brunschwig.

In a later edition of Brunschwig's distilling book the apparatus shown in figure 18 is described. In this apparatus, the vapors after having passed upward through the dephlegmating spiral, pass through an elongation of the latter which is completely surrounded by water, and is there condensed and flows into the receiver. The receiver shown was especially recommended and largely used at that

# Liber de arte Distil
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## Das büch der waren kunst zü distillieren die

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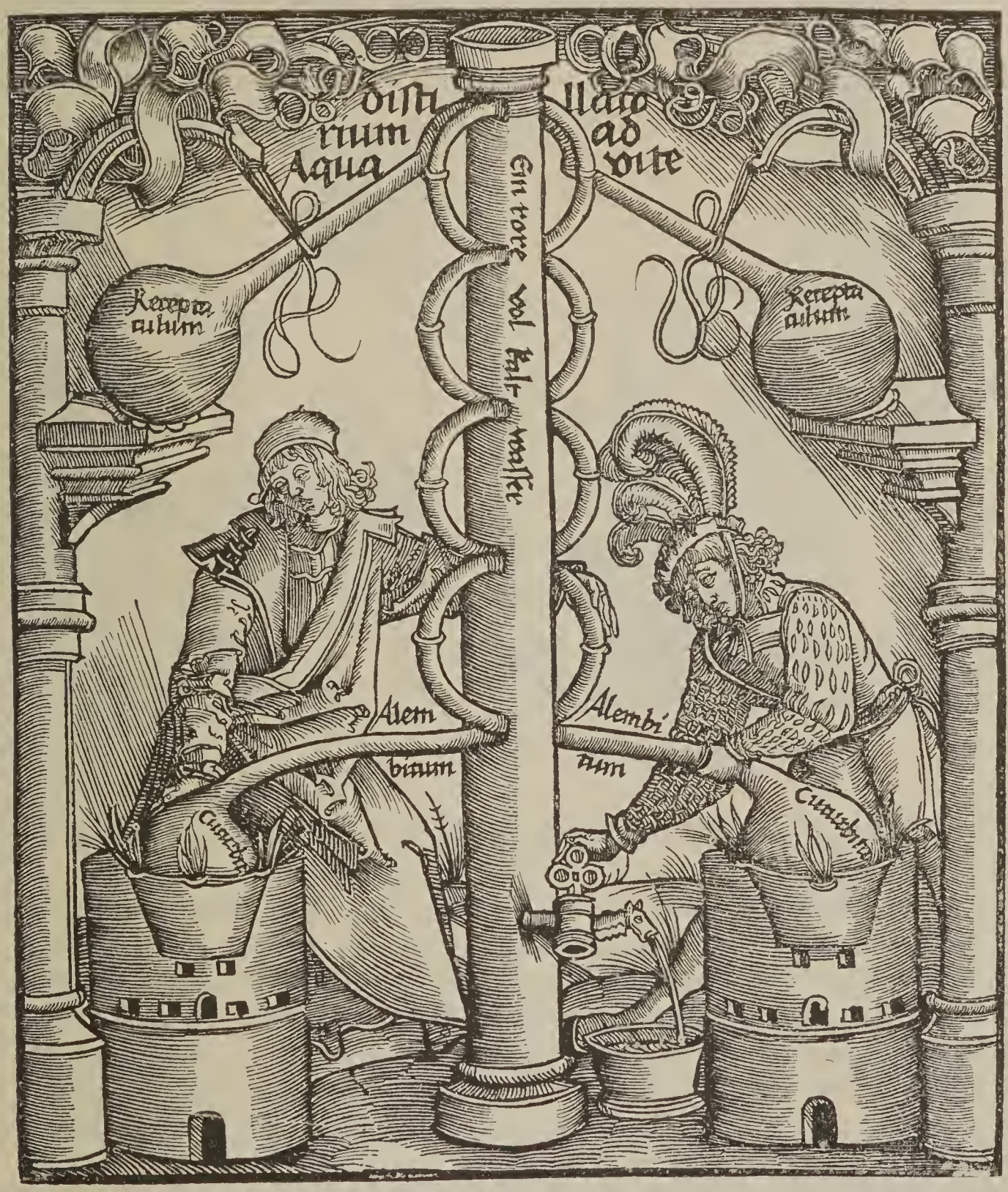



getruckt un gendigt in die keisserliche frye statt Strassburg uff sanct Mathis abent in dem jar 1507.

Fig. 17.

time. It was built with a conical top or helm, which was intended to condense and thus prevent the escape of any vapors arising from the warm distillate. This same receiver can be seen in several of the figures which follow. When the methods of condensation were more perfected this receiver was replaced by ordinary flasks.

Figure 19 shows "a still for dystilling the water of lyfe" from an English work of 1576. The fantastic dephlegmating worm is here also used, but with only a small pan of water, the rest being effected by air condensation, and is nearly the same in principle as

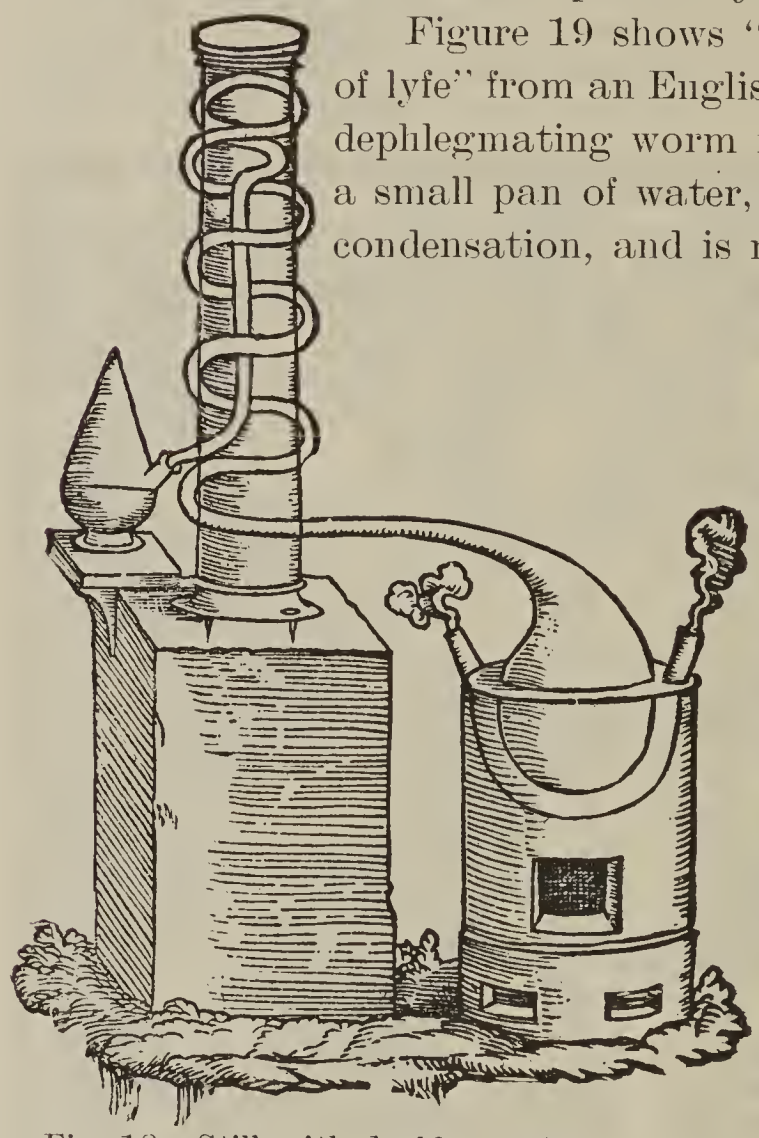


Fig. 18. Still with dephlegmating spiral and condenser.

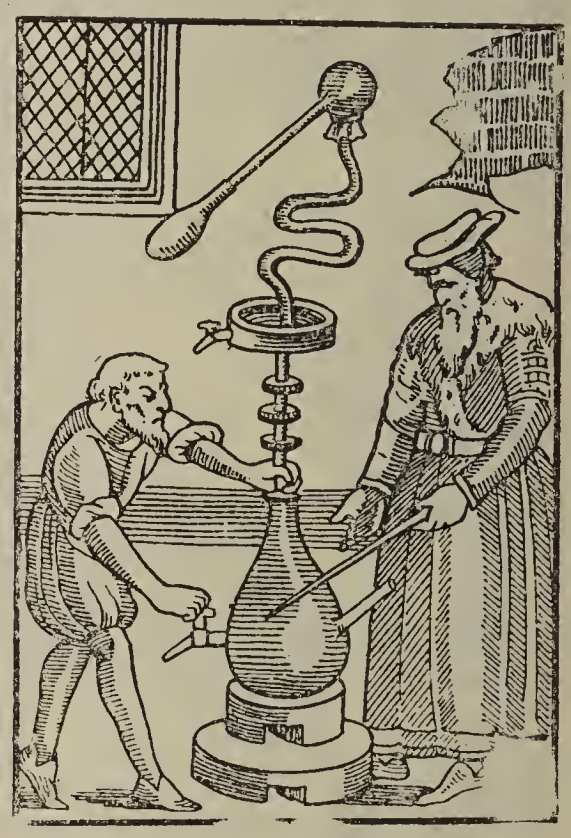


Fig. 19.
"A still for dystilling the water of lyfe." From English work of 1576.

our smaller modern laboratory dephlegmators, although quite different in appearance.

As to the strength of the alcohol obtained with these apparatus, it seems to have been of only a low grade of purity. The method of determining the strength of alcohol by means of its specific gravity did not come into use until the discovery of absolute alcohol at the end of the last century. The determination of the strength of the distilled spirits previous to this time is, therefore, not very accurate. Brunschwig believed to have reached the highest grade of purity if a strip of linen soaked in the alcohol and lighted, also took fire when the alcohol had burned off. In spirits containing much water, the latter would remain on the linen and prevent its combustion.

Olive oil was also used as a test of the strength of the alcohol. When dropped upon the alcohol the olive oil had to sink readily in it. As the sp. gr. of olive oil is about 0.916, even a 60 p. c. alcohol would correspond to this test. Later, the gunpowder test, still used in the eighteenth century, came into use. Gunpowder after being saturated with the spirit had to explode after the alcohol had burned off.

(To be continued.)

# Specific Gravity and the Official Temperature.

By *Oswald Schreiner.*

A glance at the tables of the specific gravity of various substances in Landolt and Börnstein's Physikalisch-chemische Tabellen will reveal the fact that the determination of this important constant is in a chaotic condition. That this constant varies with the temperature is well known, and that it ought to be determined at a standard temperature is also universally admitted, yet never followed. Why is this? Simply because there is no convenient standard temperature recognized by chemists and pharmacists.

There are at present three general methods of stating specific gravity, viz.:

1. The substance at a stated temperature as compared with water at 4°, and written $\frac{t^\circ}{4^\circ}$, in which $t$ is the temperature at which the determination was made and must always be given.

2. The substance and water both reduced to 0°, and written $\frac{0^\circ}{0^\circ}$.

3. The substance at a stated temperature as compared with water at the same temperature, and written $\frac{t^\circ}{t^\circ}$.

The third method is really the experimental one, the first two results being obtained from this by calculation; for knowing the density of the water at this experimental temperature, the sp. gr. as compared with water at 4° can be readily calculated, and if the coefficient of expansion of the substance is known, this can also be reduced to $\frac{0^\circ}{0^\circ}$ or any other temperature desired.

The question as to which method is the one more commonly employed naturally presents itself. This question can best be answered by looking over the tables of the sp. gr. of the more important

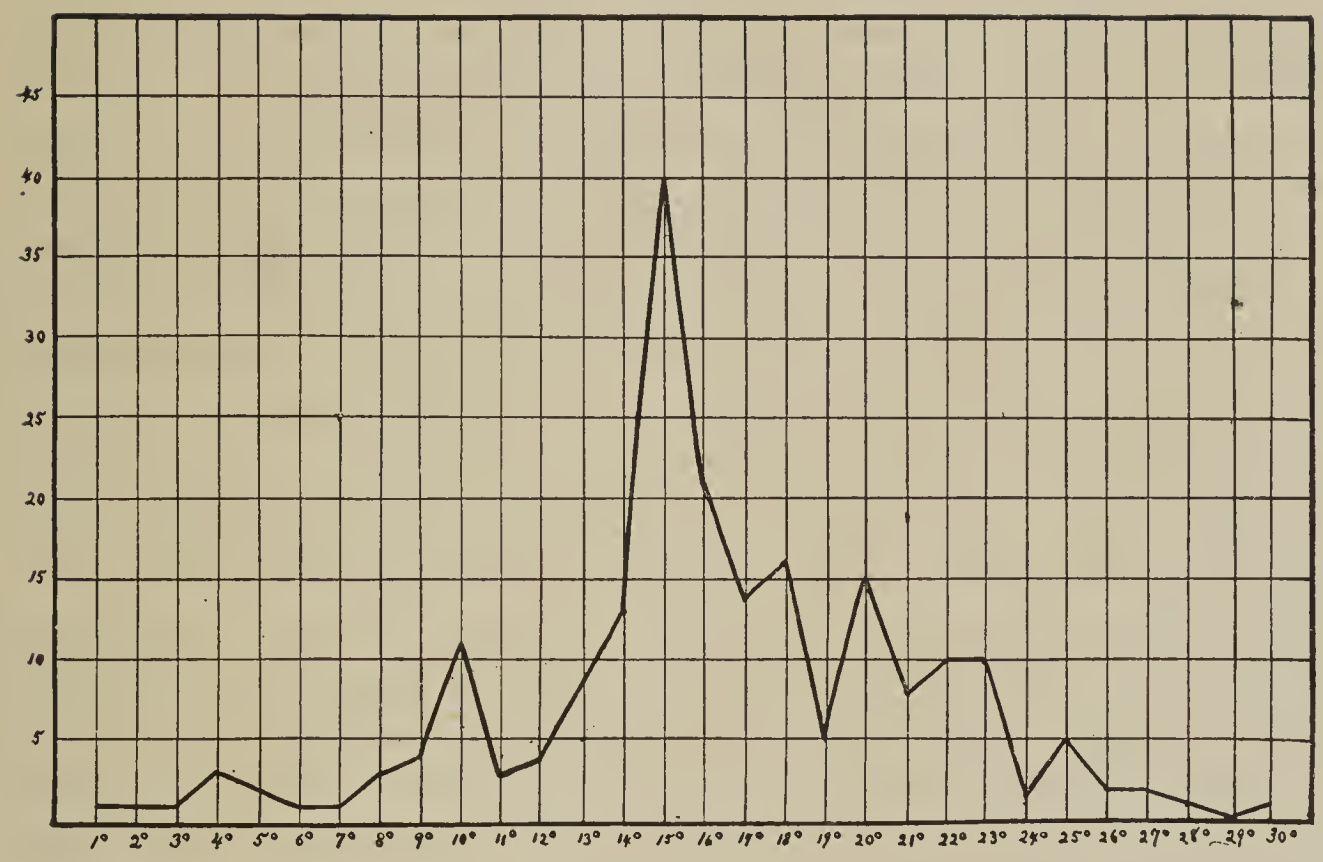
organic compounds in Landolt and Börnstein, pp. 163—190. We will find the following:

| | |
|---|---|
| $\frac{0°}{0°}$ | 159 |
| $\frac{t°}{4°}$ | 129 |
| $\frac{t°}{t°}$ | 260 |
| $\frac{t°}{0°}$ | 1 |
| $\frac{t°}{4.2°}$ | 1 |
| $\frac{t°}{15°}$ | 6 |
| $\frac{t°}{17.5°}$ | 7 |

The 260 specific gravities stated as $\frac{t°}{t°}$ are distributed as follows:

| $t°$ | | $t°$ | | $t°$ | |
|---|---|---|---|---|---|
| 1 | 1 | 13 | 5 | 25 | 5 |
| 2 | 1 | 14 | 13 | 26 | 2 |
| 3 | 1 | 15 | 40 | 27 | 2 |
| 4 | 3 | 16 | 21 | 28 | 1 |
| 5 | 2 | 17 | 14 | 29 | 0 |
| 6 | 1 | 18 | 16 | 30 | 1 |
| 7 | 1 | 19 | 5 | | |
| 8 | 3 | 20 | 15 | | |
| 9 | 4 | 21 | 8 | 37 | 1 |
| 10 | 11 | 22 | 10 | 40 | 1 |
| 11 | 3 | 23 | 10 | 46 | 1 |
| 12 | 4 | 24 | 1 | 50 | 1 |

The last four were determined above 30°, because the substances were solid at a lower temperature. The remaining 47 specific gravities were determined at fractional points on the scale, and with the exception of 17.5, 12.5 and 15.5°, hardly two are alike. In a discussion of these results from the experimental standpoint, the specific gravities stated at $\frac{0°}{0°}$ and $\frac{t°}{4°}$ can hardly be considered. These results were really obtained by reduction from the experimental figures. Of the remaining experimental temperatures by far the greater number of determinations are between the limits of 15 and 23°. This is perhaps better seen from the following curve, which shows the results graphically.




It is evident that the method of stating the sp. gr. as it was obtained from actual experimental figures, without reduction to other conditions, is the method most favored by chemists. Reduction to $\frac{0°}{0°}$ is next in numbers. This reduction is made so as to correspond with the standard of density for gases. Nevertheless I should like to say a word in favor of the one third in importance, namely $\frac{t°}{4°}$. Much has been said in text-books concerning the identity of the terms density and specific gravity; but as density is the amount of matter in unit of volume, it is evident that we can only speak of specific gravity as density when it has been reduced to $\frac{t°}{4°}$. As the term density really goes with the metric system, it is evident that this would be the most desirable expression to use, but for many practical reasons the sp. gr. at $\frac{t°}{t°}$ is to be preferred.

While $\frac{t°}{t°}$ is the favorite form of expressing the sp. gr., there is a great diversity of opinion as to the value of $t$ to be used. The U. S. P. of 1890 adopted the standard $\frac{15°}{15°}$. This was certainly a step in the right direction, but it has not met with the favor expected, due simply to the reason that the standard is too low for practical work. As a result every experimenter has used the temperature most convenient for him, or has omitted the determination of this constant altogether. The temperature of 15° is at least 5°, and more often 7 to 8°, below the temperature of American laboratories and stores.

If the determination is made at room temperature and is reduced by calculation to $\frac{15°}{15°}$ nothing has been gained by making this standard, for it would be far better, if any reduction is to be made, to reduce the result to 4°. Or if the determination is to be made at 15°, the liquids must be cooled down by exposing to the cold weather outside the laboratory in winter, or using cold water or even ice in summer. Finally, when the pycnometer is filled at the proper temperature and brought into the warm air of the room, the liquid expands, runs out of the capillary opening and evaporates. Moreover, if the air is at all moist, water will deposit on the colder pycnometer, and accurate weighing is impossible. It is true that the last two difficulties somewhat compensate each other, but what experimenter would trust such results? These difficulties are recognized by all those who have ever attempted to take the sp. gr. at this temperature. An increase in the standard temperature of the U. S. P. is absolutely necessary in order to make it practical. But let us be careful, lest in avoiding Charybdis we should run against Scylla.

In order to avoid the above named difficulties, a suggestion has recently been made* to raise the standard temperature from $\frac{15°}{15°}$ to $\frac{37°}{37°}$. As this suggestion has also been put before the U. S. P. Revision Committee† in the form of a motion to be voted upon, and as it is now open for discussion, it may not be out of place to briefly state some of the reasons why this temperature of 37° should not be adopted.

That a higher temperature than 15° is not only desirable, but necessary, has been pointed out, but why should it be 37°? The answer is that this is the temperature of the human body. The relation between sp. gr. and the temperature of the body I fail to see. We do not make sp. gr. determinations in our bodies, but in the laboratory or store, and merely holding the pycnometer (unless it be an exceedingly small one) in the hand, is not sufficient to bring the liquid to this temperature. The argument that the thermometer might be more readily tested at this temperature than at zero, it being so difficult to obtain a temperature of zero degrees in these days when ice is manufactured by machinery, the ice when made being colder than 0°, is of course untenable. It makes no difference what the temperature of the ice is when made, the temper-

* Druggist Circular. May, 1900.

† The writer presents this review at the request of a member of the Revision Committee.

ature of melting ice is always zero, and this is what is used in testing thermometers. If a higher point than zero is to be ascertained, why not use the sodium sulphate method recommended by Richards and Churchill* which gives a constant temperature of 32.48°, or the sodium sulphate and sodium chloride method of Meyerhoffer and Saunders† which gives a constant temperature of 17.9°. Moreover, sodium sulphate can be found in every drug store, city or country, summer or winter.

But to proceed to the real reasons why this temperature should not be adopted.

1. The volatility of all liquids increases with the temperature. A temperature of 37° will be very troublesome on this account alone, to say nothing of the experimental inaccuracy which must inevitably result. The author of the suggestion himself admits that substances like ether, acetic ether, benzin, bromine, carbon disulphide and amyl nitrite cannot be determined at this temperature. Chloroform, alcohol and alcoholic liquids he includes among the substances to be determined at this temperature. The tendency of a substance to volatilize increases as the temperature rises and is greatest at its boiling point. The vapor tensions at various temperatures give us comparative values of the tendency to volatilize. A comparison, therefore, of the vapor tension of a few liquids and solvents of the U. S. P. at different temperatures from 15° to 40° will give us a measure of the increase of volatility.

| | Water. | Acetic Acid. | Alcohol. | Chloroform. | Ether. |
|---|---|---|---|---|---|
| 15° | 12.67 | — | 32.60 | — | — |
| 20° | 17.36 | 11.73 | 44.00 | 160.47 | 432.78 |
| 25° | 23.52 | — | 59.03 | — | — |
| 30° | 31.51 | 20.61 | 78.41 | 247.51 | 638.80 |
| 35° | 41.78 | — | — | — | — |
| 40° | 54.86 | 34.77 | 133.42 | 369.26 | 907.04 |

These few illustrations show conclusively that the volatility is greatly augmented by this unnecessarily high temperature. Even water, the least volatile of the solvents of the U. S. P., shows an increase of nearly 4 times its vapor tension at 15°. Alcohol, the next important solvent in U. S. P. preparations, shows an increase of more than 3 times its vapor tension at 15°. Chloroform, with its

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* Ztschr. f. phys. Chem., 26, p. 690.
† Ibidem, 27, p. 367.

already great volatility, is more than doubled, and the more volatile liquids are entirely out of the question.

2. The solubility of gases decreases with rise in temperature. A sp. gr. determination of the stronger ammonia water at 37° is absolutely impossible, for in heating it up to this temperature, the greater part of the ammonia is driven off and the resulting sp. gr. does not correspond with the original ammonia, but with the weaker ammonia remaining in the pycnometer. Attention need only be called to the fact that this stronger ammonia water is heated to only 60° in order to drive off the ammonia gas for making the Spiritus Ammoniæ. The same argument applies to the latter preparation, both alcohol and ammonia escaping at this temperature. Even the 10 p. c. ammonia water will lose a large amount of the gas at 37°, so large in fact as to make a sp. gr. determination valueless. The same is true of hydrochloric, sulphurous and nitric acids, spirit of nitrous ether, solution of hydrogen dioxide, etc. The strength of ammonia water and the stronger acids is largely determined by means of the sp. gr. tables, and it is evident that a sp. gr. determination on a sample from which some of the substance has been driven off by heat is worse than useless, it is absolutely wrong.

3. Experimental difficulties. The idea in suggesting this higher temperature was to overcome the experimental difficulties of a cold bath, evaporation from the pycnometer due to expansion of the liquid, and condensation of moisture on the cold pycnometer. The evaporation, we have already seen, is not done away with, and the difficulty of a cold bath has been replaced by the difficulties attending a warm bath. The temperature of the laboratory or store seldom falls below 20° and surely never rises above 25°, except during the hottest summer weather, the average laboratory or store temperature being about 22°. A bath at 15° is only 5 to 7° below the temperature of the room, whereas one at 37° is 15 to 17° above room temperature. The tendency of both these baths is to come to the temperature of the surrounding air. The greater this difference between room temperature and bath, the more difficult is it to keep the bath constant. It is thus seen that while the temperature of the human body may be constant, it is quite different with the liquid with which we are working, and the constancy of the bodily temperature avails us nothing. In fact the very difficulty which was to be remedied is only augmented in another direction. The ideal condition

would be to have a bath in which to determine the sp. gr. as near as possible to the temperature of the laboratory or store, or at least but slightly above it. This temperature should not be higher than 25°. If the room is colder, it is of course easy to warm the bath up a little, or should the room be warmer than 25° (which occurs but seldom), the bath can readily be regulated by pouring a little colder water into the bath. This colder water is readily obtained even when no ice can be had. Every city druggist is supplied with city water and even on the hottest days this water is below 25°, being cooled by flowing through the underground pipes. In fact, I have never found it warmer than 22°, even at the end of the summer. Every country druggist has access to a well or spring, the coolness of which is proverbially recognized.

4. The temperature of 37° is also recommended for making up volumetric solutions. The author of this 37° suggestion calls special attention to the error involved in making up a standard solution at 15° and using it at room temperature. It did not seem to occur to him that if the solution were made up at 37° and used at room temperature that the same errors, somewhat greater in fact, occur. He bewails the fact that the chemist and pharmacist does not use the U. S. P. standard temperature in making up his volumetric solutions. Neither the pharmacist nor the chemist is here to blame, but the U. S. P. for having a standard which is not practical. It is of course evident to every worker that if he makes up and uses his solutions at room temperature, he is nearer to the true result than if he had made it up at 15°, and decidedly nearer than if made up at 37°. Here as with specific gravity we must select a temperature as near as possible to room temperature and certainly not exceeding 25°.

That a temperature higher than 15° is necessary for practical work is generally admitted. That 37° is entirely too high and objectionable for several reasons has been shown. The question is then as to what temperature to adopt. This standard temperature ought to be kept as low as is consistent with room temperature. 20° has not given the writer much difficulty and seems to him to be high enough, but if a higher temperature is desired, do not let us go beyond 25°. This has already been incidentally referred to as a convenient standard. Nor do we as pharmacists or pharmaceutical chemists stand alone in this. The physical chemist has already adopted this as his standard for electrical conductivity.

This was at first determined at 18°, but the difficulties of keeping a bath constant at this temperature were soon recognized and 25° was adopted. All electrical conductivity determinations are now made at 25° all over the world. Every institution where physical-chemical work is done has a bath which can be kept constant at 25°. When the new physical-chemical institute at Leipzig was built a few years ago, a large tank, about 8 to 10 ft. in length and about 2½ ft. deep, was put into the laboratory. This tank is filled with water and kept automatically at 25° from one end of the year to the other. In this bath all constant temperature experiments are performed. In the laboratory here we have a bath of about 50 liters capacity which is filled with water and kept constant at 25° by means of a stirrer and thermostat. When once started and regulated it requires no further attention. The volumetric flask need only be immersed in the bath until the temperature of the solution is constant. For sp. gr. work the pycnometer is filled with the liquid, the capillary stopper inserted and set into the bath. The liquid will expand slightly and run out of the capillary opening. This is touched now and then with a strip of filter paper and when no more oozes out, the liquid is at the temperature of the bath and can now be taken out, wiped off and weighed. As the room is usually somewhat cooler, the liquid contracts and thus all danger of evaporation is done away with. No moisture can condense on the pycnometer, as this is either slightly above or the same as room temperature. Accurate and rapid weighing is thus made possible.

I should like to call attention to another matter, which is, nevertheless, of interest in this connection. The pharmacopœia is a book for the pharmacist and not for the chemist or physicist. No matter what temperature the pharmacopœia may adopt, the latter will still continue to take his sp. gr. where he pleases and make whatever reductions he thinks necessary. The question is then, has the pharmacopœia a right to expect an accuracy of the pharmacist (not of the chemist and physicist) which it itself does not uphold. In other words, are we not sometimes given to being what might be called over-accurate. Perhaps the most difficult thing to learn is to know when to be accurate. It is merely waste of time and a great deal of trouble for a pharmacist to weigh off a kilogram of sugar for making syrup on an accurate balance having a capacity of only 100 gr., and thus necessitating 10 weighings. Such accuracy is not upheld by the

pharmacopœia. Perhaps the change in the specific gravity when determined at different temperatures is somewhat overestimated. First of all, why is the sp. gr. at $\frac{15°}{15°}$ different from that at $\frac{20°}{20°}$? If both liquid and water expanded equally, the result would not change, and the sp. gr. at $\frac{15°}{15°}$ would be the same as at $\frac{20°}{20°}$. The change in sp. gr. is therefore due to the unequal expansion of the liquid and the water. In aqueous solutions the expansion is almost, though not quite. the same as that of the water itself, and the sp. gr. is therefore but slightly affected by temperature. In the following table a few sp. gr. have been calculated for different temperatures to show this effect.

| | Sugar solution (ab't 43%). | Diff. for each degree. | Glycerine. | Diff. for each degree. | Olive oil. | Diff. for each degree. | Ether. | Diff. for each degree. |
|---|---|---|---|---|---|---|---|---|
| 4° | 1.1955 | | 1.2600 | | 0.9240 | | 0.7360 | |
| 15° | 1.1874 | | 1.2537 | | 0.9183 | | 0.7196 | |
| 19° | 1.1849 | .0006 | 1.2520 | .0004 | 0.9162 | .0005 | 0.7141 | .0014 |
| 20° | 1.1843 | .0006 | 1.2515 | .0005 | 0.9158 | .0004 | 0.7128 | .0013 |
| 21° | 1.1838 | .0005 | 1.2511 | .0004 | 0.9152 | .0006 | 0.7115 | .0013 |
| 22° | 1.1832 | .0006 | 1.2508 | .0003 | 0.9148 | .0004 | 0.7102 | .0013 |
| 23° | 1.1826 | .0006 | 1.2504 | .0004 | 0.9144 | .0004 | 0.7088 | .0014 |
| 24° | 1.1821 | .0005 | 1.2500 | .0004 | 0.9139 | .0005 | 0.7075 | .0013 |
| 25° | 1.1815 | .0006 | 1.2497 | .0003 | 0.9135 | .0004 | 0.7063 | .0012 |

In these calculations the following coefficients of expansion were used.

Sugar solution ..... 0.0007030 (Marignac).
Glycerine..... 0.0005342 (Emo).
Olive oil..... 0.0007423 (Spring).
Ether ..... 0.00214967 (Pierre).

The result shows that in the case of the sugar solution the difference is but slight, and this is true of most aqueous solutions. With glycerine the result is even more constant. As the pharmacopoeia requires that the sp. gr. of glycerine be not below 1.25, it will be seen that this sample of glycerine would answer to the sp. gr. 1.25, if the results are rounded off to two decimal places, anywhere between 15° and 25°. The changes in the sp. gr. of olive oil are also very slight., The pharmacopoeia gives the limits 0.915 to 0.918. This particular oil would be within these limits anywhere between 15° and 22°. Of the 114 specific gravities of liquids given in the U. S. P. only about 4 are accurately stated, about fifty are given within limits from 0.100 to 0.001, and the remaining number is divided up between "about," "not below," "not less than," and

"not higher than." In perhaps most of the cases where the limits are given, the limits themselves are far greater than the difference in sp. gr. due to a few degrees in temperature. The olive oil above cited is stated within comparatively narrow limits of sp. gr. and yet this small limit allows a latitude of 7° in temperature. This is one extreme, let us now look at the other.

In the last column of the table ether is considered. Ether has the next to the highest coefficient of expansion of all the liquids mentioned in Landolt and Börnstein, the highest being that of methyl iodide. It would, therefore, show the greatest change in specific gravity with change in temperature of any liquid in the pharmacopoeia. This change is of course too large to be neglected.

In the above table, it will be noticed, the differences in sp. gr. for each degree are constant, at least within the limits of room temperature. It is also evident that, this difference for each degree being known, the sp. gr. at any standard temperature can be calculated with the greatest ease. To illustrate: The sp. gr. of ether is found at room temperature, which is 22°, both ether and water being at this temperature when weighed. It was found to be 0.7102. The difference for each degree is .0013, as seen from the table. We must, therefore, add $.0013 \times 2 = .0026$ to get the sp. gr. at $\frac{20°}{20°}$. This gives us 0.7128. This is surely a far simpler calculation than the reduction involving the use of the coefficient of expansion and the density of water, both of which are long decimals and involve multiplication and division. Moreover, the coefficients of expansion of by far the larger number of liquids of the U. S. P. have never been determined, and so a reduction of this kind would be entirely impossible. But this change in sp. gr. for each degree could be readily determined experimentally, once for all. All that would have to be done is to determine the sp. gr. of the liquid at $\frac{15°}{15°}$, $\frac{20°}{20°}$ and $\frac{25°}{25°}$. From the results, subtracting and dividing by 5, the change could be found for each degree between 15° and 20° and between 20° and 25°. These may or may not be alike, depending upon whether the coefficient of expansion of the liquid in question is uniform. This range of temperature would surely include the range of room temperature.

The pharmacopoeia must of course adopt some standard temperature at which to state its specific gravities. Let this be as near as possible to room temperature, say 20°. Then let the pharmacist determine his sp. gr. at the temperature of the laboratory or store,

be it 19°, 21° or 23° and then by consulting such a table of differences, determined once for all, make the necessary correction, or if too small, he may omit it altogether. He will know at least, by consulting such a table, whether his sp. gr. is near the true result. Such a proceeding, it seems to me, would give results which would in every respect correspond with the accuracy which the pharmacopoeia has a right to expect of the pharmacist or the pharmaceutical chemist in testing pharmacopoeial articles. When the sp. gr. is to be determined as an accurate physical constant of a new chemical or pharmaceutical substance, to be used for purposes of reference, the chemist, physical chemist or physicist will of course use the same precautions as to constancy of temperature, etc. as he has always done.

The Pharmacopœia of 1890 gives explicit directions for making volumetric solutions and reagents, and includes directions and remarks on gasometric estimations, alkaloidal assay and the optical rotation of organic substances. It would be well if the U. S. P. of 1900 were to include under the heading of specific gravity more explicit directions and remarks than was done in 1890 and that there be given under this heading 1) a table of the density and volume of water for each degree from 0 to 35° and for every five degrees from 35 to 100°; 2) a table of the mean coefficients of expansion from 0 to 100° of the more common substances and an illustration showing how to use these tables in making reductions of sp. gr. to any temperature, and 3) a table giving the change in sp. gr. of the pharmacopœial liquids for each degree between 15—20° and 20—25°, with illustration showing how the table was made and how it is to be used. Neither would a few remarks on the determination of the other constants mentioned in the pharmacopœia, namely boiling, congealing, and melting points, be out of place.

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## Acetanilid.*

By *Charles W. Gorr.*

*Reactions with Sodium or Potassium-Hydroxides.* When heated with strong NaOH solutions, acetanilid is resolved into its compon-

* Continued from p. 408.

ents and according to Schwartz[1] (1888) droplets of anilin will appear on the surface. Hyde[2] (1899) has failed to obtain such results, the writer, however, has obtained results agreeing with those of Schwartz.

Flueckiger[3] (1887) suggested the use of the phenyl isocyanide or iso-nitrile test for aniline as a method for detection of acetanilid after it has been decomposed into aniline, etc., by the action of sodium hydroxide.[4] The reaction takes place as follows:.

$$C_6H_5NH{-}C_2H_3O + NaOH = C_6H_5{-}NH_2 + C_2H_3O_2Na.$$

$$C_6H_5NH_2 + CHCl_3 + 3NaOH = C_7H_5N + 3NaCl + 3H_2O.$$

Behrens[5] (1896) also uses the action of sodium-hydroxide in a microscopic test for acetanilid. The acetanilid is decomposed by boiling with a sodium-hydroxide solution and the resulting components are tested for as follows: Aniline is recognized in the form of globules while the detection of the acet-radicle is accomplished by evaporating to dryness a small quantity of the solution, saturating with formic acid and testing with uranyl-acetate. The appearance of the light yellow colored tetrahedrons of sodium-uranyl-acetate indicates the presence of the acetic acid radicle.

*Potassium Hydroxide and Potassium Permanganate Solutions.* If 0.01 g. of acetanilid is boiled for a minute or two with 5 cc. of potassa solution, a very minute fragment of potassium permanganate added and again boiled, it will give a yellow but slightly turbid solution.[6] After cooling by immersing in cold water and supersaturating with acetic acid the yellow becomes a yellowish red. Moerck (1896).[7]

Shoepp[8] (1897) reports a method for identifying acetanilid with the use of a microscope. The substance is dissolved in the smallest quantity of concentrated hydrochloric acid. To a drop of this solution a small quantity of a saturated solution of sodium bromide is added and then a crystal of potassium chlorate. An amorphous precipitate will result, and upon the addition of a drop of 20 p. c. alcohol numerous needles will separate out.

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[1] Pharm. Ztg., 33, p. 357.
[2] Merck's Report, 8, p. 198.
[3] Apoth. Ztg., 2, p. 409.
[4] According to Schwartz (Pharm. Ztg., 33, p. 357.) acetanilid can by means of this test be distinguished from phenacetine in that the latter gives an aromatic odor when so treated.
[5] Mikro-chemische Analyse organischer Verbindungen, Heft III, p. 9.
[6] Phenacetine, methacetin, penocoll, lactophenine and exalgin also give this color when similarly treated, but on acidulating with acetic acid all with the exception of exalgin are changed to a purplish red: exalgin is changed to a bluish green.
[7] Am. Journ. of Pharm., 68, 3. 394.
[8] Pharm. Ztg., 42, p. 106.

*The Indophenol Test.* Schwartz[9] (1888) made use of the indophenol test for aniline in the detection of acetanilid. Acetanilid is decomposed with potassium hydroxide and the resulting aniline is shaken out with ether, which is then evaporated. To the residue water and a few drops of phenol are added followed by some 10 p. c. chlorinated lime solution. A blue color developes, which is converted to a red upon the addition of hydrochloric acid. Excess of ammonia will again change it to the indophenol blue.

*With Zinc Chloride.* Vulpius[10] (1887) introduced the action of zinc chloride[11] as a test for acetanilid. When heating acetanilid with zinc chloride, flavanilin, a yellow dye-stuff, is obtained, which has a mossgreen fluorescence. It is also stated[12] that vapors of an aromatic odor are given off; while phenacetine treated in the same way produces the odor of acetic acid and antipyrine an odor resembling that of carbon disulphide.

Braeutigam[13] (1899) suggests the following test with zinc-chloride: To 0.1 g. of acetanilid, which has been boiled with 4 or 5 cc. of commercial hydrogen peroxide for half a minute, two to three grams of chloride of zinc are added while boiling. A red coloration results (consisting of aniline-red) while phenacetine and antipyrine do not act this way but upon further boiling a brownish red precipitate will separate out.

# MONTHLY REVIEW.

## New Remedies.

**Tannalbin** or Tannin Albuminate Exsiccated, Knoll, is a form of tannin albuminate, introduced by Prof. R. Gottlieb, of the Pharmacologic Institute of the University of Heidelberg. It is obtained by heating freshly prepared albuminate of tannin at 110° or 120° for five or six hours until it is rendered insoluble in the gastric juice.

*Description.*—Tannalbin occurs as a light brown, odorless, tasteless, permanent powder; it contains 50 percent of tannic acid combined with egg-albumin, and is insoluble in water and in acid fluids.

*Medical Properties and Uses.*—Tannalbin, unlike tannic acid, does not precipitate pepsin, coagulate albumin, or impair the digestion. According to

[9] Pharm. Ztg., 33, 3. 364.
[10] Apoth. Ztg., 2, p. 153.
[11] Compare Chem. Prop. and Fischer and Rudolf, Ber., 15. p. 1500.
[12] Proc. Am. Ph. Ass., 44, p. 872.
[13] Pharm. Ztg., 44, p. 75.

the text-books, when tannin itself is taken into the stomach, a part of it unites with the pepsin and albumin present, while a part is converted into gallic and pyrogallic acids, and in these forms it is both absorbed and excreted. The theory of the action of tannalbin which differentiates it medicinally from tannic acid is as follows: Tannalbin, being insoluble in the gastric juice, apparently passes through the stomach without the above reactions having occurred. Arriving in the duodenum, tannalbin meets with the alkaline secretions of that portion of the bowel and is dissolved, and the digestive action of the pancreatic juice commences its action upon the albumin constituent, gradually setting free the tannin to act as an astringent throughout the entire intestinal tract. Thus set free, the tannic acid produces its characteristic action on the contents of the bowels, and on the walls of the intestinal canal. It coagulates the mucus, precipitates the ptomaines resulting from bacterial action and the fermentation and decomposition of food, constringes the intestinal walls, and empties the capillaries. These facts explain in part its remedial virtues in the treatment of certain diarrheas. It removes the cause of the diarrhea by depriving the bacteria infesting the intestinal tract of pabulum for their continued existence, renders the toxic ptomaines resulting from bacterial action inert by forming practically insoluble tannates with them, and acts as a local astringent and healing agent upon the irritated mucous membrane of the intestines. Thus, it is said, tannalbin acts indirectly as a disinfectant, overcomes putrefaction, and removes the tendency to undue acidity from fermentation.

Tannalbin has been recommended in the treatment of those forms of diarrhea in which astringents are indicated, such as acute intestinal indigestion after the bowel has been emptied by an enema or quick cathartic; intestinal catarrhs, both acute and chronic, employed in conjunction with proper diet alone or with other remedies; intestinal affections of children in hot weather; in phthisical diarrhea, and in diarrheas of the serous or atonic type.

*Dosage.*—The adult dosage, owing to the innocuousness of the drug, is not confined within any very exact limits; indeed, a maximum dose, on the basis of physiological limits, has not yet been established by any detrimental experience. As much as 10 gm. daily has been given continuously for days in succession by several authors, with wholly beneficial effect; but in the ordinary run of practice 3 to 6 gm. per day, in 1 to 2 gm. single doses, evenly distributed, has mostly been found sufficient for adults. In urgent acute cases a more frequent repetition (in 2-hourly or even 1-hourly intervals) has proved useful for promptly creating the first impression, the frequency being usually diminished as soon as the dejections are seen to improve and their number to decrease. In such cases manifest improvement is noticed often within a few hours from the beginning of treatment. In most of the chronic classes of cases it has been advised that treatment should continue

for a time after the normal function of the intestine is re-established, to guard against any relapse.

The doses for nurslings are mostly stated to be from 0.3 to 0.5 gm.; for children, varying with age, up to 1 gm. The principles of initial frequency of dosage in urgent acute cases and of continuance after a cure has been established in long-standing chronic cases, apply here as they do for adults.

*Administration.*—Tannalbin, being a tasteless, odorless and insoluble powder, its administration by mouth is, in adults, most readily performed by taking the powder dry on the tongue, and washing it down with a draught of some liquid. Its lightness prevents its being easily stirred up with milk or sweetened water for children; but it will mix well enough with any viscid menstruum, such as syrup, honey, gruel, or mucilage. It likewise may be advantageously prescribed in cachets.

This general presentation is followed by a discussion of purely medical aspects of the subject with numerous clinical reports.

[Merck's Archives, 2, p. 283.] *E. K.*

**Euquinine** (Quinine Carbonic Ether, Zimmer).—Many a time has the desire been expressed that something could be found that would prove a therapeu tic equivalent of quinine and yet be devoid of its defects. All effects hitherto made to disguise the taste of quinine and to overcome its deleterious effects have proven fruitless. Not until the synthetic chemist took up the problem was any substantial gain made. Now he seems to have solved it by using a $CO_2$ group to link an ethyl group with a quinine molecule in which a single hydrogen atom has been displaced. This new body, Euquinine (Quinine Carbonic Ether, Zimmer), is reported by medical authorities to possess precisely the same therapeutic properties as quinine, while being free from its drawbacks. Thus, it is said to be free from the tendency to produce nausea, loss of appetite, ringing in the ears, and the other unpleasant effects of quinine. People having an idiosyncrasy for quinine are reported to have taken euquinine with impunity and have derived from its use the same beneficial results as from quinine. Euquinine has been administered to children in coffee, milk, soups, and cocoa; and they have taken it willingly.

*General Properties of Euquinine.*—Euquinine has the chemical formula

$$CO\begin{matrix}/O.C_2H_5\\ \backslash C_{20}H_{23}N_2O_2\end{matrix}$$

It occurs in light, fleecy conglomerations of delicate white needles, which melt at 95° C., are sparingly soluble in water, but dissolve readily in alcohol, ether or chloroform. When placed on the tongue it is a first perfectly tasteless; after some time a faint bitter taste becomes noticeable, reminding one of a very weak quinine solution. With sugar or syrup, only the sweet taste can be detected; and if the syrup is flavored to taste with oil of lemon, oil of cloves, oil of wintergreen, oil of cinnamon, or balsam of tolu, it is as pleasant as a confection.

*Laboratory Experiments.*—Prof. Angelo Celli,* director of the Hygienic Institute of the University of Rome, has published a very interesting monograph on malarial infection, in which it is stated that quinine cannot be considered as a means of insuring immunization, because it is inactive in small doses, while it may not be given in large doses for any length of time, as it too greatly affects the stomach and nervous system. Of the other remedies experimented with as to their immunizing powers, almost all were found to be inactive. Only methylene blue and euquinine gave positive results. "Euquinine, which, like quinine, possesses antimalarial powers, without at the same time causing disturbances like the latter, and which is devoid of the repugnant taste, appears to possess prophylactic value; and it would be advisable to conduct an extended series of tests as to its value as an immunizer in malarial infection."

In a second report the author again calls attention to the fact that "euquinine has given very good results as a prophylactic for quartan, as well as mild and severe tertian fevers." For this purpose doses of 1 gm. were given several days before, and 15 to 20 days after, the experimental injection of malarial blood.

Dr. Oscar Marchetti has carried out a series of comparative pharmacological tests with euquinine and quinine at the laboratory of materia medica of Prof. G. Bufalini† in Florence, and has found that the action of euquinine is almost identical with that of quinine, but that the former "exerts a less depressing action on the cardiac and vascular systems, both as regards intensity and duration, and that a more rapid return to a normal condition occurs, due undoubtedly to the more satisfactory action of euquinine."

This general presentation is followed by abstracts of numerous clinical reports. [Merck's Archives, 2, p. 293.] *E. K.*

**Menthosol** has been so named by Logueki, and consists of a mixture of parachlorphenol, and menthol, but the proportions are unknown. It is a viscid liquid, possessing an odor and taste similar to that of parachlor phenol. It is to be used both internally and externally as an antiseptic. [Wien. Klin. Rdsch., 1900, No. 26, through Pharm. Zeitg., 45, p. 533.] *W. O. R.*

**Iod-eigon** is a preparation that was formerly known as *a*-eigon, and is to be used as an external antiseptic in place of iodoform. It is an albumen preparation and contains 20 p. c. of iodine. Various preparations containing Iod-eigon are being placed on the market, as dusting powder, containing 30 and 10 p. c. of iod-eigon; salve, 5 and 10 p. c.; suppositories 2 p. c.; and salve paste 5 and 10 p. c.

[Pharm. Zeitg., 45, p. 535.] *W. O. R.*

* Centralbl. f. Bakter., Parasitenk. u. Infectionskr., 1900, No. 3.
† Settimana medica dello Sperimentale, 1898, No. 40.

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4. La Morue et L'Huile de Foie de Morue. Présentée et soutenue le 12 Juillet 1900 par J. Roussel. 1899—1900, No. 14. pp. 110.

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2) Erlebnisse eines jungen Arztes. Schweiz. Sitten- und Kulturbild aus dem Ende des 16. Jahrhunderts. Separatabzug aus dem Sonntagsblatt des "Bund." Von B. Reber. pp. 48. 1899.

3) Schweizerische Beiträge zur Geschichte der Pharmacie. Von B. Reber. Separatabdruck aus der Schweizerischen Wochenschrift für Chemie und Pharmacie. pp. 50. 1898.

4) Beiträge zur Geschichte der Pharmacie. Von B. Reber. Sonderabdruck der Pharmaceutische Post 1898 und 1899. pp. 54.

5) Titel und Publikationen des Herrn Burkh. Reber in Genf. pp. 11.

Author—St. Louis. Some twentieth century problems. By William Trelease. Reprinted from Science, N. S. Vol. 12, p. 48. pp. 15.

Author — Madison. 1. On the electrolytic deposition of metals from non-aqueous solutions. pp. 6. 2. The relation of the taste of acid salts to their degree of dissociation, II. pp. 5. By Louis Kahlenberg. Reprinted from the Journal of Physical Chemistry.

Author—Baltimore. 1. An investigation of the fatty oil contained in the seeds of Lindera benzoin. 2. Lauric acid and some of its derivatives. Dissertation submitted to the Board of University studies of the Johns Hopkins University for the degree of Doctor of Philosophy by C. D. Caspari. pp. 28. 1900.

## Reviews.

Arzneiverordnungslehre für Studirende und Aerzte. Von Professor Dr. Rudolf Kobert in Rostock. Dritte erweiterte Auflage. Ein Band, 390 S., mit 207 Textabbildungen. Verlag von Ferdinand Enke in Stuttgart. 1900.

Die erste Auflage des für Arzt, Pharmaceut und Drogist gleichwerthigen Werkes ist im 6. Bande (1888), S. 298 dieser Zeitschrift besprochen worden. Die vorliegende dritte Auflage ist textlich und in Abbildungen erweitert und bereichert worden. Neben den Formeln und Methoden des traditionellen Receptur- und Dispensirwesens Alteuropas sind auch die Mehrzahl der den Fortschritten der Technik und Wissenschaften erwachsenen Neuerungen auf dem Gebiete des Arzneiwesens zur Anschauung gebracht worden.

Für den angehenden Arzt ist das Buch eine ergiebige praktische Anleitung, so lange derselbe in der zunehmenden Ueberfülle der medicinischen Hilfswissenschaften nicht von der veralteten Ordinationsweise im Einzelnen und Kleinen entlastet wird. In dieser Richtung gilt das Buch, wie viele andere, noch sehr den conservativ mittelalterlichen Gebräuchen und Arzneiformen. Ohne rechte Kenntniss des im Laufe der letzten Decennien auf dem Weltmarkte vollzogenen Wandels verhält man sich in Deutschland mehr als anderswo schwerfällig und misstrauend gegen die grossen und schätzenswerthen Neuerungen in der Herstellung und den Formen moderner Arzneimittel. Der Welt- und Sachkundige weiss indessen sehr wohl; dass nicht nur die chemische, sondern auch die pharmaceutische Grossindustrie und vor allen die amerikanische das Verdienst haben, die beste und zweckmässigste Herstellung rationeller, dispensir- und gebrauchsfertiger Arzneiformen nicht nur vollbracht, sondern auch ungeachtet aller, meistens tendenziösen Opposition, zur wohlverdienten Anerkennung und Geltung gebracht zu haben. Die mit grossem Kapital und mit den tüchtigsten technischen und wissenschaftlichen Kräften und Hilfsmitteln arbeitende Fabrikindustrie hat das in der Therapie und dem Arzneiwesen zur Geltung gelangte Princip, nach der im Laufe der Neuzeit erreichten

Concentration der Wirkungsfactoren, auch die grösst erreichbare Volumverminderung der Arzneiformen für jede Anwendungsweise, sowie überdem grössere Dauerbarkeit und absolute Zuverlässigkeit des Gehaltes der dispensir- und gebrauchsfertig hergestellten Mittel in weit höherem Maasse praktisch zur Thatsache gemacht, als das bei dem früheren auf individueller Anlage und Leistung beruhenden handwerksmässigem Kleinbetriebe in der sogenannten Receptur möglich ist. Dieser dem öffentlichen Wohle, sowie den Interessen des Patienten und Arztes in weit besserer und sicherer Weise dienliche Wandel wird sich auch in Europa nolens volens vollziehen und zur Geltung gelangen.

Es wäre zu wünschen, dass das auch für die Berufskreise des Auslandes werthvolle Werk in einer weiteren Auflage auch in der bezeichneten Richtung auf die Höhe der Zeit gebracht würde. Es würde dann bei den modernen Arzneiformen und deren Herstellungsweisen, sowie hinsichtlich der dafür gebräuchlichen Methoden und Geräthe manches bereits veraltete mit neuem Texte und Abbildungen zu versehen haben, so z. B. bei den Fluidextracten, den comprimirten, vor allen aber den Verreibungs (Triturate) tabletten und anderen modernen Arzneiformen des Weltmarktes.

Die Ausstattung des Buches ist eine schöne und elegante.

*Fr. H.*

Die Harze und Harzbehälter. Historisch-kritische und experimentelle, in Gemeinschaft mit zahlreichen Mitarbeitern ausgeführte Untersuchungen von A. Tschirch. Ein Bd., pp. viii, 417, mit sechs Tafeln. Verlag von Gebrüder Bornträger. Leipzig. 1900, M. 18.

Die Glykoside. Chemische Monographie der Pflanzenglykoside nebst systematischer Darstellung der künstlichen Glykoside von Dr. J. J. L. van Rijn, Direktor der Landwirthschaftlichen Reichsversuchsstation in Mastricht. Ein Bd., pp. xvi, 511. M. 10.

Within the period of a twelve-month, German scientific literature has been enriched by three valuable monographs on phytochemistry: the work on volatile oils by Gildemeister and Hoffmann, and the two works mentioned above. It is a matter of congratulation for pharmacists that this branch of chemistry, which belongs to them by birth-right as it were, has thus been enriched by representatives of their calling. Adding Guareschi's treatise on the alkaloids, translated into German (the original is in Italian) by Kunz-Krause, Bene-

dict's treatise on fatty oils, and Oppenheimer's work on ferments, it will be seen that phytochemistry is now supplied with six excellent monographs touching as many of the principal groups of plant substances. Similar works on the sugars, tannins, bitter principles etc. would make these a welcome reference library to both plant chemist and pharmacognoist.

Inasmuch as the classification of substances is in large measure a criterion of the stage of progress reached, this subject may first of all receive our attention. Of the three recent works referred to above, two have adopted the botanical classification as a basis for grouping the products under consideration, viz. volatile oils and glucosides. Tschirch, in his treatise, has classified the resins according to a more artificial system, a modification of the older system of Unverdorben with new names. This is to be regretted. He thereby gives the chemistry of the resins a setback. Although his classification is not quite as bad as the older one of volatile oils into hydrocarbons, oxygenated oils, those containing nitrogen, and finally those containing sulphur, yet in principle it is equally bad. Even if the chemistry of the resins were not more advanced than the chemistry of the volatile oils was in the thirties, this action would not be justified, because to-day we approach the subject of phytochemistry with a different understanding than was then possible.

To say that alcohols or esters are the principal constituents of one resin and indifferent substances of another, and that, although alcohols are not necessarily absent from the second class, nor indifferent substances from the first class, this difference is sufficient to make arbitrary class distinctions, is rather unfortunate. Van Rijn's standpoint, that these minor substances are phytochemically of equal importance, is more in accord with modern plant physiological and phytochemical ideas.

To attempt to classify plant products, that is complex mixtures, primarily according to chemical principles of classification has always been an unfortunate one. Whenever our knowledge of the chemical individuals constituting these mixtures is sufficiently advanced, these substances will find a place in a general chemical classification. Even if such a classification can be carried out, which is not the case for either resins or glucosides at present, the phytochemist will do well to classify his plant products also according to their botanical source. It is from genetic relationships thus brought out that the

phytochemist has fully as much to hope as from the revelation of the chemical structure of individual plant substances.

If van Rijn's classificasion is in harmony with that of Gildemeister and Hoffmann, Tschirch's manner of treatment is more in accord that of these two authors of the "Aetherische Oele." It is to be regretted that van Rijn has not given us more of a general historic account of this important class of plant products.

Whereas van Rijn, like Gildemeister and Hoffmann, endeavors to cover the entire field, Tschirch makes no attempt to include all resins. With the wide range of the term resin, it would be a difficult task indeed, yet we hope that it will be undertaken by him, should a new edition of his valuable work become necessary.

To enter upon a detailed criticism of these two monographs would lead too far. It is not to be expected that first attempts of this kind should be perfect. Even a casual survey, however, reveals omissions. Thus e. g. van Rijn's list of plants yielding methyl salicylate, and hence supposed to contain the glucoside gaultherin, cannot be complete. At least no reference is made to several lists that have been compiled within recent years by Schimmel & Co., and for two American journals. Neither does he have anything to say on other species of *Fraxinus* than *F. excelsior*, although glucosides have been found. Neither of the two authors, like so many Europeans, seems to pay any attention to American literature. Thus, e. g. Tschirch evidently was not aware of the work done in this country on abietic acid from various sources.

In spite of any and all shortcomings which specialists will, no doubt, point out before new editions become necessary, both monographs are of great value to phytochemist and pharmacognoist. They will prove useful not only to the beginner who is trying to work his way into these difficult fields of organic chemistry, but will be a great help to teachers of chemistry and pharmacognosy as well. Even botanists who now find it the fashion to denounce systematics and worship a special chapter or two of plant physiology, will find much food for reflection in the three works specially mentioned.

A mere mention of the contents may be of interest to some: van Rijn first treats of the artificial glucosides, then of the "plant" glucosides. The former are arranged in accordance with the common principles of chemical classification, the latter according to the families from the representatives of which they have been isolated.

Tschirch devotes the bulk of his treatise to the chemical consideration of his subject and about seventy pages to the botanical aspect. Inasmuch as the writer is not a botanist he prefers to say nothing about this latter part. In the chemical part the following arrangement is followed:

Historical development of the examination of the resins.

I. Period: pyrochemical examination. 16. and 17. centuries.
II. Period: qualitative examination. 18. century.
III. Period: quantitative examination, first part. From Hermstaedt (1795) to Unverdorben (1825).
IV. Period: quantitative examination, second part. The introduction of elementary analysis and the investigations by Unverdorben.
V. The investigation of crystalline substances isolated from resins etc. From Unverdorben to Hlasiwetz (1825—1865).
VI. The investigations of Hlasiwetz and the developments up to the present time (1865—1895) etc.
VII. Analytical methods for the assay of resins.
VIII. Tschirch's researches.

Introduction.

A. Tannol resins.
   I. Benz resins.
   II. Resins of the Umbelliferae.
B. Resene resins.
   I. Resins of the Burseraceae.
   II. Resins of the Dipterocarpaceae.
C. Resinolic acid resins.
   I. Resins of the Coniferae.
   II. Agaricus resin.
   III. Resins of the Caesalpinioideae.
D. Resinolic resins.
   Guaiacum.
E. Fatty resins.
   Stick-lac.

Conclusions and tables.

The book work is of the best. Both works should find extensive use among those interested in plant chemical subjects, for they will be found very serviceable to the owner as well as creditable to both authors and publisher.

*E. K.*

# SUPPLEMENT.

## Scientific Organizations.

Due to the efforts of Mr. Holmes, the past President of the British Pharmaceutical Conference, the sum of 100 guineas has been obtained for a Conference Research Worker, whose efforts are to be directed toward pharmacopœial investigation.

The Philadelphia College of Pharmacy has received a free scholarship from Messrs. Keasby and Mattison, both graduates of the college. Applicants should address Dean Jos. P. Remington.

Persons interested in the Model Pharmacy Law, adopted at the last meeting of the American Pharmaceutical Association, can procure copies of the same, free, by addressing Prof. J. H. Beal, Scio, Ohio.

**IX. International Pharmaceutical Congress.** — The following subjects were discussed and papers read:

FIRST SECTION: GENERAL PHARMACY AND PHARMACEUTICAL CHEMISTRY:—

Tschirch: On emodines.

Lepinois and Michel: On the preparation of gelatine capsules etc.

Dawidoff: The detection of spermatozoa.

Tschirch: Examination of coniferous resins.

Bourquelot: On the carbohydrates which occur in the albumen of the Ignatius bean, nux vomica and the seed of water hemlock.

Harley: A color reaction which the pepsins and papaines have in common.

Herissey: On the carbohydrates which occur in the seeds of clover, asparagus and colchicum.

Goret: On the composition of the albumen of the seed of *Gleditschia triacanthos.*

Leprince: On the action of ammonium persulphate dissolved in concentrated sulphuric acid on various substances, especially those which occur in toxicological investigations.

Charles: On the pharmacology of fresh cola nuts.

Pagel: A new method for the destruction of organic substances by means of chromous chloride and its application in toxicology.

Schlagdenhauffen and Pagel: On the presence of arsenic in various organs.

Leger: On aloeines.

Guerbet: On the composition of santal oil.

Prunier: Glycerophosphates and their detection.

The question of the assay of drugs and preparations containing alkaloids, glucosides and other definable substances was discussed at the four sessions of this section, but no conclusions could be arrived at. The matter was finally referred to the International Pharmacopœial Commission.

As members of the Commission the following members of the Congress were elected: Prof. Thoms of Berlin and Dr. Schneegans of Strassburg for Germany; Dr. H. Heger of Vienna for Austria; Prof. Tschirch of Bern for Switzerland; Prof. Bourquelot of Paris for France; Dawidoff for Russia; Duyk for Belgium; Altan and Prof. Minovici for Rumania, etc.

SECOND SECTION: MATERIA MEDICA AND PHARMACOGNOSY.

Bavay (opening the discussion on the topic): The influence of cultivation on the active principles of medicinal substances is to be studied. It is to be ascertained whether the amount of active constituent can be increased or regulated by cultivation. The discussion led to no conclusions. Four communications on the subject were received:

Verne: The cultivation of cinchona species in India and Java.

Reimers: On cultivated cinchona species.

Goris and Reimers: A preliminary study for a monograph on cultivated cinchona species.

Mahen: A study of the *Menispermaceae*.

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Tikhomirow: On the commerce of musk in Shanghai.

Tschirch: On rhubarb.

Poehl: Cryoscopic examinations for assaying pharmaceutical products.

Perrot: Anatomical examination of *Xylopia ethiopica*.

Goris: On aconites.

Tikhomirow: The structure of the testa of Russian mustard.

Tschirch: New investigations on the chemical composition of aleurone bodies.

Collin: Genunine and false Ko-Sam (fruits of *Brucea sumatrana* Roxb.).

Jadin: On the localization of the active substances in medicinal plants.

Goris: A new method for the localization of alkaloids.

This last report gave rise to a long discussion. The subject was referred to a committee consisting of Tschirch, Tikhomirow and Peron.

THIRD SECTION: BIOLOGICAL CHEMISTRY, BACTERIOLOGY, HYGIENE AND HYDROLOGY.

FOURTH SECTION: PROFESSIONAL MATTERS.

Collard: Summary of preliminary studies and examinations that are demanded in some of the European countries for the study of pharmacy.

After a general discussion of this topic the section adopted a resolution, which was supported by the Congress in general session, that nothing less than the baccalaureate should be accepted as a prerequisite, including a knowledge of Latin.

Bertaut: Is it desirable to accept the time spent as assistant in a foreign country as part of the time required before taking the state board examination?

It was agreed that it should be permissible not only to count the time (within certain limits) spent in foreign pharmacies as clerks, but also at foreign universities; further that assistants who have held positions in foreign countries be admitted to the universities of such countries for the purpose of studying pharmacy.

Voiry: On the arrangement of the pharmaceutical studies in different countries.

The point of view taken was decidedly French and only Frenchmen participated in the discussion.

Huguet: The restriction of the number of pharmacies and the results that have been achieved thereby in different countries.

The opinion that the number should be restricted was general, but there was a difference of opinion as to how this restriction should be accomplished.

Petit: On the use of the names of the Materia Pharmaceutica as trade marks.

After a debate a resolution was adopted favoring the prohibition of the use of scientific or commercial names as trade mark, also as private property.

Crinon: How is the inspection of pharmacies conducted in various countries, and how would it be desirable to organize such inspection.

After a prolonged discussion the following resolutions were adopted:

1) Inspection is to be introduced under the most natural conditions in order to test its efficacy.

2) Inspectors should be under oath and should be taken from the ranks of pharmacists no longer actively engaged in business, and from the pharmaceutical faculties.

3) The inspectors should be appointed by the government upon recommendation of the pharmaceutical societies.

Dupuy: Is pharmacy a profession or a trade.

The section agreed that it was both.

Denize: Is there any advantage in completing the assistant's period before the university training.

After a long and animated debate, 26 were in favor of having the assistant serve his time before going to the university; 10 were in favor of having him spend part of this time before, part after; 38 that university training should precede the time of probation as assistant. The vote of the majority of the section was, however, overruled by the Congress as a whole.

Bouillart: It is proposed to establish a minimum price for medicaments supplied to benevolent organizations, especially in countries where pharmacies are not subject to concessions.

The proposition was agreed to.

A communication from the Pharmaceutical Syndicate of the Department Lot was ruled out as not being international in character.

Collard: The advantages of removing pharmacies from the ground floor to the second floor and thus removing the commercial character was discussed.

PROCEEDINGS RECEIVED:—

Connecticut: Proceedings of the Connecticut Pharmaceutical Association at the twenty-fourth annual meeting held in Hartford, Conn., June 12 and 13, 1900.

New Jersey: Proceedings of the thirtieth annual meeting of the New Jersey Pharmaceutical Association held in Ausbury Park, N. J., May 23 and 24, 1900.

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## Bibliography.

Last month we published the book plate (*ex libris*) of the Swiss Pharmaceutical Society. The artist, F. Widmann, represents the genius of the Swiss society armed with spear and shield, standing on a promontory overlooking the valleys and cities with a chain of mountains in the distance, ready to protect Swiss pharmacy and to defend her against all dangers that may threaten. On the base are grouped books, retorts and other pharmaceutical apparatus.

In this issue we present to our readers a reproduction of the book plate of the Pharmaceutical Institute of the University at Bern, also by the artist F. Widmann. It symbolizes the idea that an institute, or department library, as we would put it, is

primarily to be an aid in the experimental work of the laboratory. It represents an investigator who, flask in hand, has left the laboratory for a moment in order to consult some reference work. The window affords a view upon the city of Bern and its "Muenster."

Pharmacists who have paid any attention to the character of the representatives of his calling in literature and who may have been curious to know whence Goethe derived his apothecary in Hermann and Dorothea will be interested in Goethe in seinen Beziehungen zu Apothekern, an article contributed to Nos. 62—64 of the Apt.-Ztg. by H. Vogel.

The library of the late Professor Bunsen of Heidelberg has been purchased by Gustav Fock of Leipzig.

Friedrich Wöhler, ein Jugendbildniss in Briefen an Hermann von Meyer is the latest of the series of historical monographs edited by Dr. Geo. W. A. Kahlbaum and published by J. A. Barth of Leipzig. This

welcome supplement to A. W. v. Hofmann's classic biography of Wöhler is to be had at the moderate price of M. 2.40.

Hermann Schelenz contributes an interesting account on the etimology of the word *Apotheke*, apothecary shop, to No. 65 of the Pharmaceutische Zeitung.

Julius Springer announces the second, revised edition of the Hilfsbuch für Nahrungsmittelchemiker by A. Bujard and E. Baier. M. 10.00.

John Wiley & Sons announce Introduction to chemical preparations. A guide in the practical teaching of inorganic chemistry by Professor Erdmann of Halle. Authorized translation from the second German edition by Dr. Fr. L. Dunlop, Instructor in Industrial Chemistry at the Worcester Polytechnic Institute. $1.25.

Of Essentials of medical and clinical chemistry with laboratory exercises by Dr. S. E. Woody, the fourth edition is published by P. Blakiston's Son & Co.

The art of dispensing by Peter Mac Ewan has been recast and largely expanded. This is the sixth edition and is published by the Chemist and Druggist. 6 s. 6 d. net.

The fifth edition of A synopsis of the British Pharmacopoeia, 1898, by H. W. Gadd, is announced by Baillière, Tindall & Cox. 1 s. net.

F. Sutton's A systematic handbook of volumetric analysis has reached the eighth edition. J. and A. Churchill are the publishers. 20 s.

Chemical lecture experiments by G. S. Neroth, Chemical Lecture Demonstrater in the Royal College of Science, South Kensington, is announced by Longmans, Green & Co.

Laboratory work in chemistry by Prof. E. H. Keiser of Bryn Mawr; Laboratory studies in elementary chemistry by Prof. S. C. Cooley of Vassar; and An outline in qualitative analysis for beginners by Prof. J. T. Stoddard of Smith College are three new chemical textbooks offered by the American Book Company.

Einführung in die Stöchiomitrie oder die Lehre von der quantitativen Zusammensetzung der Körper und ihren mit dieser zusammenhängenden Eigenschaften by Dr. Joachim Buhringer is published by Fr. Vieweg & Sohn of Braunschweig.

Arthur Felix of Leipzig have issued fascicles 18–21 of the standard Atlas der offizinellen Pflanzen of Berg and Schmidt, the new edition being edited by Dr. Arthur Meyer of Marburg and Dr. K. Schumann of Berlin.

Die Grundreformen im österreichischen Apothekenwesen, a retrospect and outlook into the future by Louis Grellepois has been published by Franz Deuticke of Vienna.

Die preussische Apothekenbetriebsordinanz vom 16. Dezember 1893 und die dazu ergangenen ergänzenden Verordnungen und Erlasse, is a new publication of the same category from Jul. Springer of Berlin. M. 0.60.

As announced in one of the advertising pages of the last number of this journal, the English translation of Gildemeister and Hoff-

mann's work on Volatile Oils is now ready for distribution by the Pharmaceutical Review Publ. Co. Price $5.00 net. The French translation was ready about the same time, so that this standard treatise now is to be had in three languages, viz, German, English and French, thus giving it an international character unusual to scientific and technical treatises.

A new third edition of Mindes' Manuale der neuen Arzneimittel is announced as being out by the Art. Institut Orell Füssli of Zürich. The manual comprises 308 octavo pages and can be had at Mark 4.60.

The fourth edition of the German Pharmacopoeiea or Arzneibuch für das Deutsche Reich, as it is known officially, is now out and can be had at the very reasonable price of M. 3.65 for the bound copy, or M. 2.05 for the unbound copy. It is published in R. v. Decker's Verlag. Inasmuch as the revision of our own national standard has just begun, the new Pharmacopoea Germanica, editio IV will be a book of special interest to American pharmacists at the present time.

Theoretische Chemie vom Standpunkte der Avogadro'schen Regel und der Thermodynamik von Dr. Walther Nernst. A third edition has become necessary after a lapse of less than two years. Ferdinand Enke of Stuttgart is Publisher.

CATALOGUES RECEIVED:—

F. A. Brockhaus—Leipzig. Monthly list of new books. July 1900.

U. S. Dept. of Agr.—Washington. Monthly list of publications. July 1900.

Oswald Weigel—Leipzig. Botanischer Lagerkatalog. Neue Folge, Nos. 95, 96, 97. 1900.

## Commercial.

**Chemical Industry in Germany.***—In "A Review of the Paris Exhibition," the Chemiker Zeitung gives some particulars as to the development of chemical industries in Germany, which are interesting as evidence of the remarkable progress that has been made in that respect. The manufacture of potash salt, commenced about the middle of the century at Stassfurt, is no longer confined to that place, but is also carried on in Thuringia, Brunswick and Mecklenburg, all the works being associated together as a large trade syndicate which at the present time includes twenty-one distinct firms, employing 15,570 workmen and 818 officials. The raw products are karnallite, kainite, hardsalt, sylvinite, schoenite, boracite, rock salt and brine. The products of manufacturing operations recently introduced are potassium and magnesium chlorides, kieserite, magnesium sulphate, rubidium-alum, potassium sulphate, hydrochloric acid, bromine, potassium cyanide, etc. In 1898 the production amounted to about three million metric centners of rock salt and twenty-two million metric centners of potassium salts, together with two thousand metric centners of boracite, which is used for the preparation of borax and other boron compounds.

In the manufacture of sulphuric acid the raw material is chiefly either iron pyrites or zinc blende, native sulphur being now but little used for the purpose. Most of the pyrites is obtained from Spain and Portugal. In 1897 there were seventy-three sulphuric acid factories in Germany, producing the quantity of acid (60° B.) stated in the following table:—

* From Pharm. Journ., 65, p. 273.

| Raw Materials. | Tons. |
|---|---|
| 55,183 tons German pyrites.. | 80,015 |
| 332,004 tons foreign pyrites.. | 571,046 |
| Zinc blende..... | 136,868 |
| Other sulphides..... | 50,738 |
| Gas purification residues..... | 6,915 |
| Total production..... | 845,582 |

Up to within a recent period the sulphurous acid in the roasting gases was converted into sulphuric acid exclusively in lead chambers, but about twenty years ago the Badische Anilin und Soda Fabrik at Ludwigshafen on the Rhine succeeded in applying the method devised by Cl. Winkler to the production of ordinary sulphuric acid. Hitherto that process of direct combination of sulphurous oxide with oxygen had been profitably applicable only for the production of sulphuric anhydride; but since the time mentioned no more lead chambers have been constructed at this factory. The magnitude of the operations now carried on at this factory may be estimated from the fact that while in 1865 the number of workpeople employed was only thirty, it was at the commencement of this year no less than 6,207. The consumption of coal amounted in 1899 to 243,000 tons, and the quantity of pyrites annually used in the production of sulphuric acid amounts to about 80,000 tons. In the direction of the work the company employs 305 commercial officials, as well as 75 engineers and 148 thoroughly trained chemists.

In addition to the hydrochloric acid resulting from the Leblanc soda manufacture, a further quantity is produced by the potash syndicate from magnesium chloride by the process based on decomposition of that salt by heat in the presence of water vapor. The production of chlorine and chlorinated lime from hydrochloric acid is gradually decreasing in Germany, because the chlorate industry can be carried on more economically by the electrolytic method in countries having command of water power. The manufacture of nitric acid from Chilian saltpetre is carried on in Germany to an extent that consumes, together with that used at Stassfurt and for manure-making, about half the total production of that salt.

In the manufacture of alkalies both the Leblanc and the ammonia methods are carried out, and since the treatment of potassium chloride by the electrolytic process is more economical, it is generally preferred for the production of caustic potash. Potassium chloride is, however, also converted into potash by the method introduced by Engel, which consists in subjecting a mixture of magnesia and saturated potassium chloride solution to the action of carbonic acid gas, which gives rise to the production of a sparingly soluble double carbonate that on ignition yields a mixture of potassium carbonate and magnesia, from which the alkaline salt is removed by washing, leaving magnesia fit for further use. The production of soda in Germany at the present time amounts to about 300,000 tons annually.

The electrolytic method of manufacture is carried out very successfully at the Griesheim-Elektron works at Frankfurt-on-the-Maine, the products being caustic alkalies, chlorine, etc., as well as yellow and red phosphorus. At these works 2,300 workpeople are employed and 150 officials.

The liquefaction of gases is now carried on as a manufacturing operation on a considerable scale. One

of the latest novelties is liquefied chlorine, produced at the Badische Anlilin und Soda Fabrik as a result of the investigations made by Knietsch in 1888. Strangely enough, liquefied chlorine does not act upon metals, and consequently there is not the difficulty experienced in the case of hydrogen sulphide or carbonic oxide.

Artificial manures are extensively produced in Germany by the treatment of bones, guano and phosphatic mineral, imported from Florida, Carolina and Algiers, as well as Thomas slag from the Bessemer process. The value of the superphosphate and other kinds of artificial manure annually consumed in Germany is estimated at five millions sterling.

**The Cultivation of Herbs in Surrey.***—The extent to which herbs are sold in the Midland and Northern Counties would probably surprise a chemist's assistant from the South of England if he were to take a situation in a large manufacturing town, such as Sheffield, Lancaster, or Leicester, etc. The mill operatives prefer, as a rule, to doctor themselves with herbs, and succeed fairly well in the treatment of all ordinary ailments. Some of the herbal remedies, such as composition essence, are regularly used as a drink by those who start early in the morning to their work, thus saving the time required to make a cup of tea. A teaspoonful of the liquid added to a cup of water makes a drink that stimulates the circulation of the blood as quickly and as effectually as a cup of warm tea. Herb beer is also largely used as a drink, being less intoxicating than ordinary ale, besides being cheaper. The trade in packets of herbs is therefore one of considerable magnitude. The herbs are generally imported from Germany, but the inferior quality of German produce, arising from various admixtures of other plants, dirt, or excessive drying, which reduces the herbs to stalks and powder when much handled, has led to an endeaver to grow in this country those most in demand. During the last three or four years an attempt to produce a better quality of herbs has been made by Messrs. Potter and Clarke, the well-known wholesale herbalists, who have now a herb farm of about forty acres devoted to this purpose near Carshalton, in Surrey. The herbs principally grown at present are pennyroyal, peppermint, hyssop, yarrow, mugwort, wormwood, tansy, feverfew, marshmallow, germander (*Teucrium chamædrys*), rue, lavender, bahn, American golden rod (*Solidago*), comfrey, greater celandine (*Chelidonium majus*), southernwood (*Artemisia abrotanum*), stinking orache (*Chenopodium olidum*), and cotton lavender (*Santolina chamacyparissus*). Small quantities of belladonna and henbane and savine are grown, and a notable quantity of *Datura tatula*, the purplish stems and lilac flowers of which were in excellent condition at the time of my visit in August. The plants are grown in rows, with sufficient space between most of them to allow a little circulation of air between the separate plants when fully grown. In the case of camomile and tansy and cotton lavender, the long ridges presented a mass of white or golden color that gave quite a pretty appearance to the fields.

(To be continued.)

* E. M. Holmes in Pharm. Journ. 65, p. 214.

# Pharmaceutical Review.

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## Editorial.

General interest ought to be shown in the **Intern. Catalogue of Sci. Literature** that promises to become a success if it receives the necessary financial support. It is to be issued annually in seventeen volumes and to comprise the following subjects: mathematics, mechanics, physics, chemistry, astronomy, meteorology (including terrestrial magnetism), mineralogy (including petrology and crystallography), geology, geography (mathematical and physical), palaeontology, general biology, botany, zoölogy, human anatomy, physical anthropology, physiology (including experimental psychology) pharmacology, and experimental pathology, and bacteriology. The fundamental pharmaceutical and medical sciences are included, but neither pharmacy nor medicine in a more restricted sense come within the scope of the undertaking any more than agriculture or engineering. The proper thing to do for these respective branches is to supplement the general work. Let us hope that the American Pharmaceutical Association will take care of the pharmaceutical interests at the proper time.

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The **Verein deutscher Naturforscher und Aerzte*** held its annual meeting at Aachen, the *urbs regalis*, Sept. 17—19. The general addresses were of a historic nature, reviewing the scientific progress made during the past century. The general introduction to these discourses was supplied in the presidential address which included an account of the development of the natural sciences previous to the century which is now coming to a close.

Of the thirty-eight sections one is devoted to Pharmacy and Pharmacognosy, which was attended by forty-three members of which

* For a brief account of the origin of this and similar associations see p. 537.

number nineteen signed themselves as apothecaries. The others were principally representatives of universities and manufacturing establishments. The names of the authors of the twelve papers presented, also the titles, are given in the Supplement of this number. Brief abstracts will also be found under Monthly Review.

At a joint session the advertisement of new remedies by publishing medical opinions was discussed. The establishment of a control bureau for the examination of new medicaments was recommended and a number of rules laid down which should govern the relation between manufacturer, physician and public.

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The **German Apothecaries Society** met September 3 to 6 in Stuttgart. The proceedings are primarily of a professional and commercial nature. They teach us more and more that the basal problems which perplex pharmacy everywhere are similar in all countries. In addition Germany has the antiquated system of concessions to contend with, the economic intenability of which is being fealt more and more.

The proceedings were relieved by social gatherings and by two lectures, one by Professor Theodor Paul of the University of Tübingen on "The relation of pharmaceutical chemistry to bacteriology"; the other by Professor Schmidt of Stuttgart "On the competition between chemical industry and nature in the preparatian of perfumes."

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During the month of September, three national associations that have considerable bearing on the welfare of American pharmacy held their annual meetings: The **National Association of Retail Druggists** met in Detroit Sept. 12—14; the **National Wholesale Druggists' Association** and the **Proprietary Association of America** met in Chicago during the following week. The principal outward characteristic of all these meetings seems to be a rejoicing over the continued good fellowship existing between what is called the three divisions of the "drug trade."*

The retail druggist has recognized that, whereas as an individual he may accomplish but little in influencing the jobber and the secret remedy manufacturer, as an organization he is a power to be reckoned with. Though many problems directly affecting the retail druggist are still awaiting solution, he has practically thrown his whole energy

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* The fact is evidently overlooked by some that the manufacturers of what we commonly choose to call legitimate pharmaceutical preparations are not included in the P. A. A.

on the one which promised the surest and speediest relief from the commercial depression which almost undid him a few years ago.

The exploiter of secret remedies had used the druggist as a means to secure a standing, also as agent for his nostrums. Circumstances compelled the retailer to become the manufacturer's salesman whether he wanted to or not. Self-medication, which is universal, found in the "patent medicine" a convenient form of administration. The druggist who formerly sold herbs and roots about which he knew something thus became a mere vender of nostrums of which he could know but little, if anything. It was but natural for him to adapt himself to changed conditions in popular medication and to manufacture his own popular medicines. This the large manufacturers of secret remedies naturally resented, because their interest was purely commercial. The secret remedy manufacturer, especially through the news-papers in which he advertised heavily, had developed into a power. When pharmaceutical and medical legislation was sought in most states of the Union, "patent medicines" had to be exempted in order to secure the passage of any law. Thus the nostrum found its way into department stores. These regarded patent medicines, and justly so, like any other article of merchandise. The "fixed" prices of these popular remedies being advertised extensively in the daily press, in almanacs, etc., they, more than any other article, were serviceable as a means of attracting trade by cutting prices. The reduction in the department stores was followed up by similar reductions by the druggist "cutter," who had a quick sense of business. Thus the trade in patent medicines became thoroughly demoralized until department stores sold them for less than cost merely as a bait to secure other trade. How important commercially the sale of "patent" medicines must be to most druggists becomes apparent from the statements of many wholesale druggists to the effect that more than one-half of their business consists in the sale of these nostrums.

Locally, the business depression was here and there remedied by united action of the druggists not to cut among themselves, or at least to make a like reduction with a fair profit. When, however, the stamp tax on these proprietary medicines was added to the general business depression, the retail druggists rallied in self defense. So universal was the feeling that something must be done that the association formed did not hesitate to elect a man as its first president who would not tolerate a "patent medicine" in his own phar-

macy. Mr. Hynson did not hesitate to accept the position offered under such peculiar circumstances, because he recognized that organization after all was the important factor, and that if the retail druggists of this country could be rallied about the "patent medicine" evil, a poor rallying point was better than none.

Former hostility between the retailer and the nostrum manufacturer, brought about by the partial displacement of the "patent medicine" of the manufacturer by the "own" preparations of the retail druggist, partly by the sales of the manufacturer to the department store, has evidently given way to a feeling of good fellowship. In judging the concessions which the manufacturer has made to the retail druggist, two things should not be overlooked. First, the department store has so often undercut the cutter that no profit was left, directly or indirectly, and it has rather welcomed the dictum of the "tripartite" agreement. Secondly, the department store for some years has been doing what the retail druggist did years before, namely putting out its own line of household remedies. With no such heavy advertisement bills for this class of goods, as the manufacturer had to foot, to create a demand, the department store could undersell the patent medicine man and yet realize a neat profit. For the second time, therefore, the retail druggist has become the authorized agent of the patent medicine manufacturer, who, on the whole, has reason to be satisfied with the arrangement. Evidently the average retail druggist is likewise content. The jobber who was constantly exposed to the friction between the upper and nether mill stone very likely has also reasons for rejoicing.

The effectiveness of the plan, universal honesty being out of the question, depends on close police regulation of the entire country. This is a vast undertaking and will be a constant source of annoyances. That troubles along other lines are in store, is indicated in the report of one of the committees of the N. W. D. A. in which it is claimed that the diminution in the sales of many jobbers is attributed to the direct sale of pharmaceutical manufacturers to retailers. The tripartite plan may yet develop into a quatuorpartite plan. If the jobbers are successful in securing to themselves the direct sale of all manufactured goods to retailers, the latter, no doubt, will demand that neither manufacturers nor jobbers sell directly to physicians.

Whatever the present results or prospects for the future may be with regard to harnessing the various branches of the drug trade,

we may all rejoice in one thing that is being accomplished, viz. the more complete organization of the retail druggist. But very few representatives of each state can attend the meetings of the N. A. R. D. The local meetings stimulated by the N. A. R. D., at which neighboring druggists meet, possibly to dine together and in an informal manner talk over the affairs of the day, must be doing immeasurable good. The reclusé of the past becomes a companionable fellow, who instead of regarding his business competitor as his mortal enemy, welcomes him as a companion. Even if the N. A. R. D. as an association should fail in the course of years, it is to be hoped that the state associations will more carefully foster local associations hereafter. With strong local associations standing in proper relation to the state associations, the latter will grow stronger and more representative of the druggists of each state. With truly representative state associations in close touch with local associations, a national conference might be called at any time when the necessity for national action arises. So let the "proprietors" wine and dine, let them even listen to occasional unpleasant remarks about retailers in after-dinner speeches, which, although stale, some evidently consider witty, we know that with the advance of civilization the secret nostrum incubus is surely though slowly doomed to die.

## History of the Art of Distillation and of Distilling Apparatus.*

Adapted and supplemented from "The Volatile Oils," by *Oswald Schreiner.*

The distillation of wine was in all probability known to the Indians and to the Egyptians. The first accurate statement of the distillation of alcohol is found in an apocryphal writing of the mythical author Marcus Graecus, "Liber ignium ad comburendos hostes" of the eight century. In the same work Marcus Graecus also described the distillation of turpentine and, on account of its property of combustion, he also called it *aqua ardens.* Further statements in regard to the distillation of alcohol are found in works of the twelfth century. With the decay of Arabian culture the art of distillation which had been fostered by them was also neglected, and seems to have

* Continued from p. 457.

again risen to prominence through the distillation of alcohol. The better distilling vessels devised by the Arabians had no doubt been preserved and were probably again first used for the distillation of alcohol. That alcohol should have been early recognized and valued for its exhilarating properties, is readily seen. It was considered as the highest potence of the valuable wine and was therefore soon used in medicine. Cardinal Vitalis de Furno, at the beginning of the fourteenth century, declared it a true panacea, and the Bishop Albertus Magnus describes its distillation in detail in his works. Arnoldus Villanovus was probably the first to introduce the Arabian name "alcohol" into German literature. Raymund Lullus, in the second half of the thirteenth century, described the distillation of *aqua vitae ardens* from wine and its purification by treatment with potash as a dehydrating agent. The operation had to be repeated four times before an alcohol was obtained which would burn without leaving moisture behind.

This repeatedly rectified spirit of wine was called in the alchemistic manner of speech of the time: *Mercurium vegetabile, Argentum vivum vegetabile, Coelum philosophorum*, and was considered as the first step in the preparation of the philosopher's stone, the *magisterium magnum.*

From its use as a medicinal agent the spirit of wine soon degenerated into an intoxicating drink, and, judging from municipal ordinances of Frankfurt of 1360 and of Nürnberg of 1496, the use of alcoholic liquors was general and consequently the distillation of spirits of wine must have reached considerable proportions. In the second half of the sixteenth century, Italy, and especially Modena and Venice, seem to have provided the more northern countries with distilled spirits.

In German apothecary shops a distinction was made, about the middle of the sixteenth century, between the stronger *Spiritus vini rectificatissimus* and the weaker *Spiritus vini rectificatus simplex* and further between these and brandy (*aqua ardens*).

From the *Coelum philosophorum* of Ulstad, published in the first half of the sixteenth century, it is seen how familiar the uses of alcohol were at this time. It was used for the preserving of meats, for improving wines, for the extraction of spices and other plant products, and thus led to the preparation and use of alcoholic solutions of volatile oils, aromatic resins and vegetable balsams.

Besides the "upward distillation" (*destillatio per ascensum*) of alcoholic liquids, the Arabians, and probably others before them, practiced "downward distillation" (*destillatio per descensum*), which corresponds on the whole to our modern dry distillation for obtaining empyreumatic and tar oils. At the time of the revival of the distilling art this method was also used for the preparation of the oils of certain woods, barks and spices. Juniper wood especially had been submitted to this *destillatio per descensum* since antiquity, later also guaiac wood, cinnamon, aloes, mace and other spices were distilled in this manner. The furnace contained a division in the middle, with a central opening, into which a pot provided with a beak-like opening at the bottom was either hung or plastered in. On top of the opening extending into the upper part of the furnace was placed a wire gauze and a second pot, filled with the dry substance to be distilled, was luted with its opening on the top of the lower pot. The heating was then effected by building a fire around the upper pot (fig. 20). Sometimes the lower pot was buried in the earth and a fire built about the upper pot fastened on top of this one in the same manner.

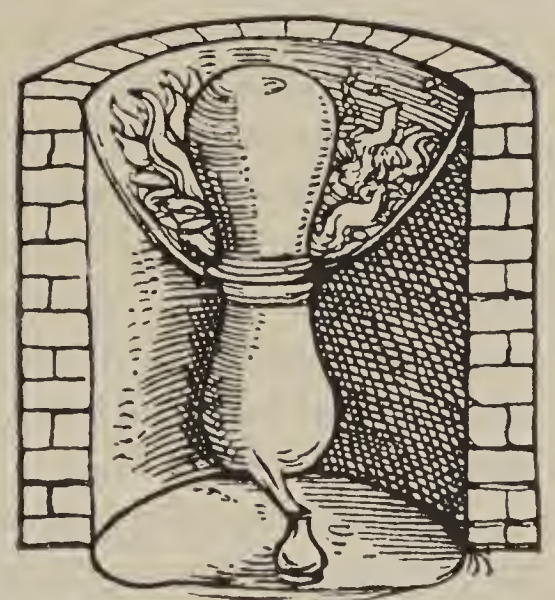

Fig. 20. Still for the downward distillation of tar oils.

Fig. 21. Still for downward distillation on a small scale.

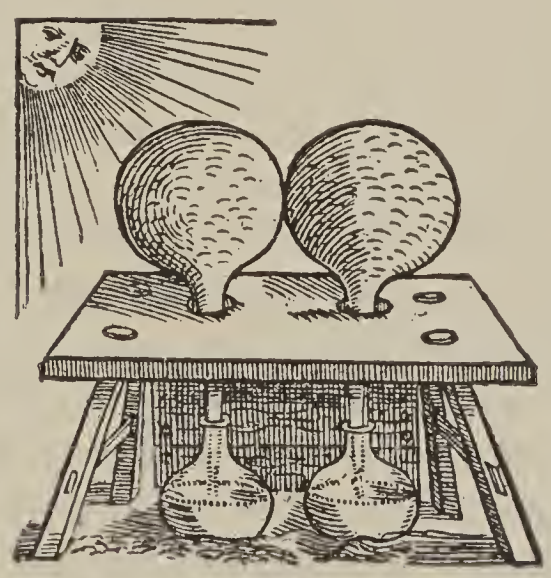

Fig. 22. Still for the downward distillation of more volatile liquids.

For the *destillatio per descensum* on a small scale glass vessels heated from the side (fig. 21) were also employed and even for some

easily distilled substances the heat of the sun (*destillatio solis*) (fig. 22) was used. At present the preparation of empyreumatic oils as well as of the finer tars is effected in cast iron or earthenware cylinders.

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From the thirteenth century on distilled aromatic waters were more extensively used as medicaments. The separation of oils both at the surface and beneath the aqueous distillate was observed, but apparently received but little attention. Owing to the practice of using alcohol in the preparation of many of these aromatic waters, the oil must frequently have remained in solution wholly or in part. Thus, e. g., the plants or plant products to be distilled were moistened with wine or *aqua vitae* before distillation; or steeped in water they were first allowed to undergo fermentation. Both alcohol and volatile oil were lost, in part at least, by submitting the plant products to a process known as circulation, a preliminary operation consisting of more or less prolonged digestion. The apparatus used for this operation will be described later. In this manner inferior, distilled aromatic waters were obtained.

The epoch-making inventions and discoveries of the fourteenth and fifteenth centuries wrought great changes in the natural sciences and their application. The discovery of the new world and the circum-navigation of Africa to the East Indies widened the horizon of the people. The period of the Renaissance and the Reformation assisted in doing away with the blind faith in authority, not only in theology, but in the natural sciences as well. The founding of universities and the invention of printing assisted largely in the spreading of knowledge. Thus information and skill, previously the secret of the few, now soon became common property of many.

With the rise of Paracelsus, who taught that the object of chemistry was to make remedies and not gold, and the establishment of the iatrochemical school, the art of distillation was once more directed into its more proper course. More particularly, with the separation of pharmacy from medicine and the establishment of apothecary shops, the distillation of aromatic waters was carried on in the laboratories of these pharmacies and was here developed until the distillation of volatile oils became an independent industry.

As was largely the case with the Arabians, the progress of the art of distillation again finds expression in medical literature. Though medical books became much more numerous with the invention of

printing, they cease largely to be a source of information with regard to methods of preparation of volatile oils and their introduction. Nevertheless, they give information about the introduction of aromatic drugs and distilled aromatic waters. The numerous works that come under consideration may be classed in three groups of equal importance: the antidotaries and later dispensatories; the treatises on distillation, which were prominent from the close of the fifteenth to the close of the sixteenth centuries; and the price ordinances for spices and drugs of various cities, which came into use about the same time.

Before discussing these works, attention should be called to the fact that the term "distilled," as used in ancient and mediaeval writings, is not always employed in the same sense as to-day. In fact, up to and including the middle ages it was a collective term implying the preparation of vegetable and animal extracts according to the rules of the art, or rectification and separation: it involved such processes as maceration, digestion, expression, straining, filtering and even processes of fermentation and decay. Aside from turpentine or cedar oil, the term distilled oil, as it is used in older literature, applies as a rule to fatty oils, which had been aromatized with the respective plants or parts of plants. Indeed, the process of preparation of "distilled" oils, described by Dioscorides and copied by Pliny, is one of aromatization. It may well be doubted that volatile oils escaped observation by Arabian naturalists and others who distilled aromatic waters, although the presence of alcohol in the distillate may frequently have kept the oil in solution.

Among the most interesting, if not the most valuable of the literary documents of the sixteenth century, are the treatises on distillation, the "Destillirbücher." The first larger work of this class was written by the Strassburg physician, Hieronymus Brunschwig (1450—1534), the two volumes being published in 1500 and 1507 respectively. The work describes principally the preparation and use of the much lauded distilled waters (*gebrannte Wässer*), distilled wines (*gebrannte Weine*), life elixirs, simple and mixed oils and balsams. How little attention was given to distilled oils is shown by the fact that but four distilled oils are mentioned and described, viz., the oils of spike, turpentine, juniper wood and rosemary. Directions for the rectification of turpentine oil are also given, viz., by shaking first with water, then with rose water or wine, and by final distillation.

An *oleum benedictum compositum* consists of a distillate of rosemary, turpentine, olibanum, mastic, ammoniac, galbanum, opopanax, cloves and cinnamon. Directions are further given for the preparation of a number of aromatic balsams, mixtures of volatile oils, by the distillation of mixtures of oleo resins and spices with the addition of turpentine oil.

How little the nature of the distillates was understood becomes apparent from Brunschwig's definition of the process of distillation. He states that it consists merely of the separation of the subtle from the crude, to make that which is fragile and destructible indestructible, to render immaterial that which is material, spiritual that which is corporeal, handsome that which is not handsome. Nevertheless he displays a considerable knowledge of the technique of distillation, although in many respects his work shows a retrogression in the art of distillation as compared with the Arabian period.

Brunschwig's "Destillirbuch" was followed by a number of similar treatises, all of which reveal the important position which the distilled waters held in the materia medica of the sixteenth century. To some extent they contribute to the history of the volatile oils themselves. About twenty-five years after the publication of Brunschwig's treatise, the smaller work of Philipp Ulstad, physician and professor of medicine in Nürnberg, appeared and became widely known. Ulstad held notions similar to those of Brunschwig with regard to the nature of distillates, and since his quintessences contained more or less alcohol, no mention is made of the oils themselves. The principal value which these works have at the present time as far as the history of distillation is concerned, lies in the thorough and careful description and figurative reproduction of the methods of distillation and utensils employed at that time.

About 56 years after the appearance of Brunschwig's "Destillirbuch" and 28 years after that of the first edition of Ulstad's "Coelum Philosophorum," Walther Hermann Reif (Gualtherus Ryff), who was surgeon in Strassburg during the first half of the sixteenth century, published a third treatise of this kind, which for a long time was held in high repute. His definition of distillation does not differ materially from that of Brunschwig. In the last part of the book he also describes "the correct method of preparing by means of artificial distillation several precious oils." They are distilled, some of them with wine, from myrrh, liquid storax, sagapenum, opopanax, am-

moniac, storax calamita, sacocolla, benzoin, labdanum, galbanum, turpentine, mastic, sandarac, guaiac wood, rosemary, spike, anise, cloves, cinnamon, mace, safron, and from various mixtures of spices, yielding the so-called balsams.

Under spike and lavender oil (fol. 186) he mentions that these oils are commonly imported from France in small bottles and sold at a high price. In his "Reformirte Apothek," which was published in 1563, he states (fol. 191) that "when lavender flowers are distilled a fragrant oil usually flows on the surface of the distillate. In France, in the neighborhood of Narbonne, where the plant grows abundantly, it is especially distilled; likewise oils from other useful and fragrant herbs, flowers, fruits and roots." This statement is of special interest inasmuch as it seems to be the earliest reference in German literature to the French volatile oil industry which evidently dates back as far as the early part of the sixteenth century.

How little Ryff knew about the nature of volatile oils becomes apparent from fol. 187 and 188 where he describes "how from several strong and good spices precious oils can be distilled." To prepare specially good oils from cloves, nutmeg, mace and safron, these spices are to be comminuted and distilled with rectified spirit. When the "spirits" have been distilled off and oil begins to come over, the mass is to be taken out and pressed between warm plates. The oil thus obtained is to be rectified by "circulation" until it is clear.

Two further works of interest in this connection were published about the middle of the sixteenth century by Matthiolus (1501—1577) and by Lonicer (1528—1586).

Brunschwig's "Destillirbuch" seems to have stimulated the distillation of aromatic waters and of spirituous aromatic distillates, and their introduction into medicine, as well as the art of distillation itself. Whereas Brunschwig's book reveals retrogression in the technique of distillation as compared with the Arabian period, Ulstad, Ryff, Matthiolus, Lonicer and others made many improvements themselves and also made known many of the older pieces of apparatus that had been forgotten. It would appear that these treatises, in a measure at least, displaced the older antidotaries. However, in the course of the sixteenth century the latter were also reprinted and revised in various European cities. Among the principal treatises in this group are those of Valerius Cordus (1515—1544) and Conrad Gesner (1516—1565), whose writings acquired great reputation and

served as the standard for others. Cordus' commentaries on Dioscorides and other scientific writings were published after his death by Conrad Gesner of Zürich, who probably made additions of his own to the text of Cordus. In the chapter on the distillation of oils, Cordus discussed the nature of the "extracts" of plants obtained by expression and distillation. Concerning the oily plant products, Cordus distinguished between the viscid, fatty oils (*oleum crassum, viscosum, terrestre*) obtained by expression, e. g. of seeds, and those of a spirituous nature (*aereum*), which can be separated from the "earthy" substances by distillation. While Cordus was undoubtedly a leader in the theoretical science of the times, he was sadly deficient in the practical technique of distillation. He ignored the rationally constructed stills in common use at the time and performed all his experiments in a primitive glass still constructed by himself.

Of still greater value than the "Annotationes" of Cordus is the "Thesaurus Euonymi Philiatri" of Conrad Gesner. The Latin edition was possibly published as early as 1550; a German edition in 1555 under the title of "Ein köstlicher theurer Schatz des Euonymus Philiatrus." Compared with Brunschwig's treatise it not only reveals a decided advance in the technique of distillation, but the first German edition of 1555 also contains several chapters on distilled oils and on "balsams" and other mixed oils. The distillation of a number of oils, viz. of the oils of lavender, rosemary, rue, cinnamon, cloves, nutmeg and others, is described, and the description accompanied with cuts of the apparatus to be used; also the distillation of juniper berries and juniper wood by *destillatio per ascensum* and *destillatio per descensum.* The oils of galbanum, labdanum, myrrh, opopanax, liquid storax and *styrax calamita*, mastic and turpentine are described. The oils from guaiac wood and sandal wood and from several other woods and barks are mentioned and their distillation described.

Gesner's notion about the nature of distillation does not differ much from the traditional one mentioned in connection with Brunschwig. His practical conception of a volatile oil is also rather confused, for in describing the several methods according to which one and the same "distilled" oil can be obtained, he not only enumerates distillation proper, but also the digestion with fatty oils, e. g. for rose oil, lavender oil, marjoram, myrrh and other oils. Another method applied to nutmegs, mace, etc., is to moisten with alcohol and distill until oil begins to come over. The process is then inter-

rupted and the oil expressed with the aid of warm plates. The aromatized fatty oil thus obtained is then distilled. He also frequently directs the plant material to be moistened with alcohol. Such flowers as have a delicate fragrance are directed to be placed in layers in the still which are separated by similar layers of odorless flowers or leaves. These are to absorb part of the aroma and thus assist in imparting it to the distillate. The oil of lavender flowers he directs to be made by first distilling the aromatic water from a glass retort. This water is set aside in a warm place during the entire summer when the oil and some water will distill over spontaneously. The oil thus obtained is to be carefully separated from the water and preserved in a glass vial.

Of this period, one important author remains to be mentioned, viz. Giovanni Battista della Porta (1537—1615), a broadly educated Neapolitan nobleman. Of his works, published in twenty books, two are of special importance to the history of distillation, his "Liber de destillatione" and his "Liber de vinis." Porta has a clearer conception of the process and of the products of distillation than any of his contemporaries. Both books, published about 1560, reveal a more comprehensive knowledge of facts and of literature than any of their predecessors. They are further characterized by originality of investigation and presentation.

Porta distinguishes clearly between expressed fatty and distilled oils and describes the methods according to which they are prepared. He also describes the preparation of aromatic waters and the apparatus by means of which the volatile oils can be separated from the aqueous distillate. However, in spite of his practical insight, Porta still adheres to the traditional conception of the nature of volatile oils. He also retains the term oil for hygroscopic substances, such as *oleum ex salibus*, *ol. ex tartaro*, *ol. ex soda*, etc.

These sixteenth century treatises on herbs and their distillation, as well as a number of less important ones, were the principal handbooks for the preparation of medicaments, especially of distilled aromatic waters, oils, and various distillates. The apparatus in use at this time and described in these works are of interest. As already mentioned the process of "circulation" was universally used as a preparatory part of the distillation of aromatic waters and oils, and probably reached the highest degree of absurdity in the sixteenth century.

(To be continued.)

# Working Formulæ for Peptonates and their Combinations.*

By *E. G. Raeuber.*

The various combinations with peptone such as the solution of peptonate of iron, peptonate of iron and manganese, and these again in combination with arsenic, quinine, strychnine, mercury, etc., enjoy a varied and extensive use in the practice of medicine.

The practice of medicine and pharmacy have kept pace with the modern advancements in all lines. It is the aim of the pharmacist to produce preparations not only elegant in appearance but at the same time palatable and effective. The originators of the various combinations of iron and managanese with peptone claimed for it easy absorption and assimilation by the human economy on account of the predigested form of the peptone. Since the peptonates have become so important an item for the pharmacist, greater familiarity with their composition and mode of manufacture should be of interest to him. The peptones are the product of the action of a digestive ferment upon some form of an albuminoid such as egg-albumen, fibrine or casein.

This soluble peptonate is then combined with iron, manganese, etc., to form the various peptonates used in medicine. The most simple formula for e. g. 1 liter of a solution of peptonate of iron and manganese would be: 15.5 grams of dry peptonate of iron and 0.4 grams of manganese sulphate are dissolved in water. To this solution is added a mixture of aromatic fluid extract, 2.3 grams; tincture of vanilla, 2.40 grams; oil of sweet orange, 0.06 grams; glycerine, 62.5 cc.; alcohol, 62.5 cc.; and acetic ether, 0.06 grams. Sufficient water is then added to make one liter and the solution filtered. If the simple peptonate of iron is wanted, the manganese salt is omitted, otherwise the formula is the same.

These solutions form the basis for the many combinations with the peptones, the required amount of quinine, strychnine, arsenic or mercury being added as the case may call for. However, it is difficult to obtain a standard preparation of dry peptonate of iron inasmuch as it does not appear to be a definite chemical compound. It is advisable, therefore, to make your own peptonized iron solution and then add aromatics to make it palatable. In the preparation of the

* Read at the Waupaca Meeting of the Wisconsin Pharmaceutical Association.

peptonized iron solution, great care and attention must be paid to all details. For the preparation of 5 liters, the following formula may be employed. It is a slight modification of Dieterich's original formula and is the one employed in the laboratory of the Wisconsin Pharmacal Company.

51 grams of dried egg albumen, or 400.0 grams of fresh material, are dissolved in a solution of 0.5 grams pepsin and 82.0 grams hydrochloric acid in 4 liters of water. This solution is then kept at a temperature of 40° C, preferably on a water bath, for from 12 to 24 hours. The solution is tested from time to time to ascertain whether all of the albumen has been converted into peptone. This is done by adding to a small portion of the liquid a few drops of nitric acid. If the liquid remains clear and shows no cloudiness albumen is no longer present. Allow the liquid to cool, filter and neutralize carefully with sodium hydroxide solution. To this neutral solution, 586.0 cc. of solution of iron oxychloride (Ph. Ger.), previously diluted with 4 liters of water, are added and the resulting liquid is again neutralized very carefully with sodium hydroxide. The precipitate is now washed until free from chlorine. The magma is then placed in a porcelain dish, 7.0 grams of hydrochloric acid are added and the mixture heated on a water bath, while stirring, until the precipitate is dissolved. Then enough water is added to measure 4 liters and subsequently a mixture composed of aromatic fluid extract, tincture of vanilla, oil of sweet orange, glycerin, alcohol and water enough to make 5 liters. Finally filter.

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## On the Most Suitable Temperature for Volumetric Tests.

By *Oswald Schreiner.*

At the request of a member of the Revision Committee there was presented in last month's Review a brief discussion as to the most suitable temperature for specific gravity work. In this discussion reference was incidentally made to the most suitable temperature for volumetric tests in the following words: "It is of course evident to

every worker that if he makes up and uses his solutions at room temperature, he is nearer to the true result than if he had made it up at 15°, and decidedly nearer than if made up at 37°." It was not thought necessary at the time to say more in regard to volumetric tests, but my attention has again been called by a member of the Committee to certain discussions which lead me to think that in regard to volumetric solutions at least I did not make myself quite clear and that a few remarks on this subject separately would not be out of place.

Here, as with specific gravity, the temperature of 15° must be abandoned, by which is meant that the pharmacopoeia must abandon it, for all practical workers have abandoned it long ago, if indeed they have ever used it. The argument has been brought forward with considerable emphasis that all volumetric instruments are graduated at 15° and that if a change were made by the pharmacopoeia, all instruments would have to be regraduated or calibrated, and that such a change would lead to endless confusion. Let us see how great the difficulty is, if indeed there is any.

The liter, the unit of volume, is the volume of a cubic decimeter; and the weight, in a vacuum at 4° C., of a liter of water is the kilogram, the unit of mass or weight. In practice the operation is reversed. The volume of a kilogram of water at 4° and in a vacuum is a liter. This is a true liter and if we wish to calibrate a flask at any other temperature, three things must be taken into consideration: — 1st, the expansion of the glass vessel; 2nd, the expansion of the water; and 3rd, the fact that the weighing is to be made in air. If, for instance, a flask is to be calibrated at 20°, without going into the details of the calculation, we must weigh into it 997.359 grams of water at 20°, in air, and with brass weights. This flask would hold a true liter at 20°. This is, however, not the liter as it is commonly employed. Owing to the numerous and somewhat laborious corrections which are made necessary by a strict adherence to the liter as the unit of volume, Mohr proposed to regard as the standard volume the space occupied by a kilogram of water when the same is weighed in the air with brass weights at a temperature of 17.5° C. It is this unit, known as the Mohr liter, which is used at the present time in the graduation of measuring instruments found in the market, the temperature being in most cases changed to 15°. It is this liter with which the pharmacopoeia has to deal.

The Mohr liter is larger than the true liter, for if we make corrections for the weight in air and the expansion of the water we find that the Mohr liter contains 1002.311 true cubic centimeters.

The liter with which the pharmacopoeia has to deal is, therefore, not the true liter, but it is the volume of a kilogram of water at 15°, weighed in air with brass weights. The burettes, pipettes and other measuring instruments are graduated on this same basis, namely at 15.° That this liter is not a true liter, as defined above, does not offer the slightest difficulty, the only requirement in our work being, that each cubic centimeter on our burette, pipette or cylinder be the one thousandth part of the contents of our flask. If our liter is a little larger than a true liter, so is each cubic-centimeter, and by relatively the same amount. From this it is evident, that it makes no particular difference at what temperature our instruments are graduated, providing that all the instruments used have been graduated at the same temperature. If, therefore, two different operators are working with different sets of instruments, the one with a set graduated at 15°, the other with a set graduated at 20°, they will both reach the same final result in their volumetric estimations.

Now how is it, if the instruments are graduated at 15° and the solution made up at, let us say, 25°? At this higher temperature the flask holds less than it did before, due to the expansion of the water, but on the other hand the flask has enlarged somewhat due to the expansion of the glass. But, if this is true of the flask, it is also true of every cubic centimeter in the burette or pipette, and to relatively the same amount. Each cc. on the burette is therefore still the one thousandth part of the contents of the flask, and the conditions stated above are fulfilled. We are not dealing with true liters or cubic centimeters, but with volumes which have the same relation to each other. For instance, in a liter flask, graduated, let us say at 15°, we make up at 15° a decinormal solution of iodine. It contains 12.653 gr. of iodine. Each cc. as measured on the burette contains therefore 0.012653 gr. of iodine. In this same flask, graduated at 15°, we make up another solution of iodine at 25°. It again contains 12.653 grams. The one thousandth part of this, as measured on the burette, and called a cubic centimeter, contains 0.012653 grams of iodine, the same as before. If we use 20 cc. of either of these solutions, as read on the burette, we will of course

reach the same results. From what has been said it follows that a volumetric instrument, graduated at any temperature, can be used at any other temperature, providing that all the instruments used have been graduated at one and the same temperature. In this case we are not dealing with true cubic centimeters and true liters, but with volumes which have the same relation to each other. I do not wish to be misunderstood, I do not say that a liter flask will hold a liter no matter at what temperature it is used, but what I do say, is that, for the purposes of volumetric analysis it makes no difference, since the same relation is retained between all the volumes on all the instruments.

Still a third case remains to be considered. The instruments are graduated at 15°, the volumetric solution is made up at 15°, but is used at a higher temperature, let us say 25°. The expansion of the liquid for the interval from 15 to 25° amounts to 2.047 cubic centimeters, so that its volume is now 1002.047 cc. The active material in the solution is, therefore, now dissolved in 1002.047 cc., whereas it ought to be dissolved in 1000, and each cc. as measured on the burette contains therefore less of the active substance and when used a larger number of cc. are required than would be at 15°. But how large is this difference? It amounts to only 0.2 of a cc. on every 100 cc. and as the amount of volumetric solution usually employed is about 25 cc. and but seldom exceeding 50 cc. in the pharmacopœial tests, this difference amounts to only a small fraction, from nearly nothing to 0.1 of a cc. Indeed, the Pharmacopœia might be severely criticised for laying so much stress on the accuracy in regard to temperature, when it allows a far greater error to creep in by suggesting the rounding off of figures, such as 12.653 to 12.65 and even to 12.7 when accurate balances are not at hand. If the Pharmacopœia allows such inaccuracies, why should it emphasize the far smaller inaccuracies due to changes in temperature. Moreover, the small changes above noted are less than the errors of calibration found in the burettes of the market. It is indeed a difficult matter to obtain a burette which at one point or another does not vary by nearly 0.1 of a cc. from the true reading. We have here another case of what might be called over-accurate requirements. Although the difference as we have seen is small, no one would even be guilty of such a proceeding. It is of course fundamentally wrong, to make up a solution at one temperature and use it at another. The best

proceeding is to make it up at room temperature and use it at room temperature. This will vary somewhat, but as has been shown above, the error is small even for as great a difference as 10° and so great a fluctuation is certainly rare.

I have discussed this question entirely from the standpoint of the pharmacist or pharmaceutical chemist and not from the standpoint of the "seeker for the last decimal place." The Pharmacopoeia, I take it, is a guide for the pharmacist and the pharmaceutical chemist, to aid him in testing the chemicals and drugs which he handles. It is not a text book or guide to chemical and physical research. For the latter work, only calibrated weights and measures and calibrated thermometers should be used, but for all ordinary work of the Pharmacopoeia such accuracy is asking too much, especially when the requirements in other directions are so lenient.

The foregoing considerations lead to the following conclusions: 1) Measuring instruments graduated at 15° can be used at any other temperature without influencing the final result of a volumetric estimation. 2) If a solution be made up and used at another temperature an error results, but this is often no larger than is occasioned by the irregularities in the bore of the burette.

The note at the beginning of the chapter on volumetric solutions in the Pharmacopoeia need therefore only read as follows:

NOTE.—All volumetric solutions should be prepared as near as possible to the temperature at which they are to be used.

The temperature at which the instruments were graduated does not come into consideration at all, the only requirement being that they were all graduated at the same temperature.

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## The Bubonic Plague.*

By *Frederick G. Novy.*

The province of Yunnan in China adjoins French Tonkin and British Burmah. It is of interest to the student of epidemiology because from this mountainous and difficultly accessible region there

* Although the Review has within this year published an account of this dreaded disease, the article by Dr. Novy in Popular Science Monthly is of such a nature that it does not duplicate much of what has been previously published in this journal on this subject. This historic and geographie account ought to be of as general interest as it is of import and therefore deserves the widest dissemination possible. *Ed.*

has issued but recently a disease which has been considered as practically extinct. Frightful as have been the ravages of the pest in the middle ages, it is noteworthy that during the past hundred years, with the exception of two slight outbreaks (Noja in Italy in 1815, and Vetlianka in Russia in 1878), the disease has been unknown in Europe. During this time the pest has not been extinct, but has existed to a greater or less extent in certain parts of Asia and in Africa. Four and possibly five of these endemic foci are known to-day. The province of Yunnan is one of these regions. The mountainous district of Gurhwal, lying along the southern slope of the Himalayas, is another center where the pest has continued to prevail. The recent travels of Koch in eastern Africa have brought to light a third region about Lake Victoria, in the British province of Uganda, and the German Kisiba, where the plague has existed from time immemorial, cut off as it were from the outer world. Only last year Sakharoff called attention to a fourth focus in northeastern China, and it is quite likely that a fifth focus exists in Arabia. These regions are of great importance in so far as the existence of permanent endemic foci sheds not a little light upon the development and spread of those great epidemics which, like great tidal waves, have in the past swept over whole countries and even continents.

It is not known when or from whence the pest was first introduced into Yunnan. Unquestionably, it has existed in the extreme western parts of the province for many decades. Eventually the disease spread throughout the province, and frightful ravages are known to have occurred in 1871—73. Repeated visitations of this dread disease have taught the natives of Yunnan, as well as those of Gurhwal and of Uganda, to desert their villages as soon as an unusual mortality is found to prevail among the rats. In spite of the frequent recurrence of the plague, it did not spread to neighboring provinces, largely because of the fact that little or no communication exists between Yunnan and the adjoining Chinese states. Recently, however, the plague did succeed in crossing the frontier, and, in so doing, it has given rise to an epidemic which, as will be presently seen, has already made an unenviable record and has a future that no one can foretell.

The way in which the disease spread from Yunnan has been quite clearly established. Along the Tonkin frontier, throughout the provinces of Quan-si and Yunnan, the Chinese maintain a large number of military posts. Mule supply-trains for these posts passed from

province to province over the difficult mountain paths. The mule-drivers were natives of Yunnan. In 1892 the plague existed in Yunnan, and it was in the summer of 1893 that the disease appeared at Long-Cheou in Quansi among the Yunnan mule-drivers. These drivers arriving at the post of Lieng-Cheng, after one of their journeys from Yunnan, repaired to the city of Long-Cheon, about ten miles distant. During their sojourn in this city the muleteers developed the first known cases of the plague. From these men the disease spread throughout the city and to the neighboring posts and villages.

From Long-Cheou the plague descended the Canton River and reached Naning-Phu. From thence it followed overland to the seaport Pakhoi, some hundred and fifty miles distant. A few months later, in February, 1894, it reached Canton, either by descending the river from Naning-Phu or by boat from Pakhoi. That the plague at Canton, in 1894, had not lost any of its old-time destructiveness is seen in the fact that it is estimated to have caused not less than one hundred thousand deaths in Canton in the short space of two months.

From Canton the plague spread to Hong Kong in April, 1894. It was during the existence of this epidemic that the first bacteriological studies of the disease were made and resulted in the discovery of the plague bacillus. In the fall of 1894, the disease died out in Hong Kong, but it reappeared in 1895 and 1896. Considering the fact that Hong Kong is one of the most important maritime centers, it is not surprising to find that in the spring of 1896 the plague was carried by shipping to the Island of Formosa. It is quite certain that about the same time the plague was carried from Hong Kong to Bombay. At all events, the existence of this disease was recognized in Bombay in September, 1896, by Doctor Viegas. Previous to this date, the mortality in Bombay was abnormally high, undoubtedly due to the very unsanitary condition of the overcrowded city.

The existence of famine in India, together with the filthy, overcrowded condition of the population, enabled the plague to gain a firm foothold in a relatively short time. Indeed, there can be no doubt but that the disease was well established at the time it was first recognized. It is no wonder, then, that in spite of the most stringent precautions, it spread like wildfire, so that in a short time the weekly deaths from the plague rose to nearly 2,000. In the face of such a relentless enemy, it is but natural that a large proportion of the population should seek safety in flight. It is believed that fully

300,000 people left Bombay shortly after the plague developed. There can be no doubt but that these refugees, directly or indirectly, carried the disease to the neighboring villages, and thus contributed to the enormous dissemination of the pest throughout Western India. In the Presidency of Bombay there were reported, in less than three years, more than 220,000 cases, with more than 164,000 deaths. When it is furthermore recognized that the natives concealed the existence of the disease as much as possible, it will be evident that these figures reveal a partial but, nevertheless, a grim truth.

With Bombay and the surrounding country thus seriously infected, it became merely a question of time when the disease would be carried to other ports and countries, by vessels and by overland routes. In spite of the sanitary perfection which we may flatter ourselves on having attained in recent years, it is nevertheless a fact that the disease is slowly but steadily and, as it were, stealthily invading port after port. That the sanitary methods, however, are not at fault is seen in the fact that when an early and prompt recognition occurred the disease has been held in check. The insidious spread of the disease is rather due to the enormous development of commerce and to the rapid means of communication with distant countries.

From Bombay the plague has spread to ports on the Persian Gulf, on the Red Sea, and has reached Alexandria. Aden, Djeddah, Port Said, Cairo have all had outbreaks of the disease. Beirut and Smyrna have each developed straggling cases. Isolated cases have been met with in London, at St. Petersburg and in Vienna. However, only three appreciable outbreaks have as yet occurred on European soil. The first was that at Oporto in Portugal, where one hundred and sixty cases, with fifty-five deaths, have developed up to the present time. The second outbreak occurred at Kolobovka, a village near Astrakhan. Of the twenty-four cases that developed there in July and August, 1899, twenty-three died. The last outbreak is that at Glasgow, where the disease made its appearance but a few weeks ago.

In addition to following the great international highway of Suez, the disease has insidiously spread to the countries of East Africa. Mauritius and Madagascar, with the adjoining mainland of Mozambique and Lorenzo Marquez, have become more or less infected, and, if reports are to be credited, it has also appeared in one of the Boer towns and also on the Ivory Coast in Western Africa. Last fall the disease reached South America. It apparently was first recognized

at Santos, in Brazil, during October, although early in September, according to reports, a peculiar disease, causing swelling of the glands and death within forty-eight hours, was reported at Asunçion, the capital of Paraguay. At the present time Rio Janeiro is infected. The sanitary condition of these South American cities is far from being the best, and, consequently, there is but little hope that the disease will be eradicated or even held in check. With South America more or less thoroughly infected, it is evident that the United States, as well as Europe, are now threatened from all sides. The gravity of the situation is seen in the fact that already last November two cases of the plague were found in New York harbor aboard a coffee ship from Santos. Several cases have also developed on ships bound from the latter city for Mediterranean ports.

The United States is threatened not merely from the East Atlantic and South Atlantic, but also from the Pacific. As a matter of fact, the danger to our Pacific ports is greater, owing to the direct communication with the Orient. It has been already indicated that Hong Kong has continued to be infected ever since 1894. On several occasions it disappeared during the winter months, only to reappear in spring. The more or less constant prevalence of the plague at this great seaport, necessarily will lead directly or indirectly to a dissemination of the disease along the entire Pacific. Already it has prevailed at Amoy, and has even extended to other Chinese ports as far as Niu-Chwang. For several years it has already persisted on the island of Formosa. Japan was invaded last fall at Kobe and at Osaka, and although it disappeared during the winter, yet only a few weeks ago it has reappeared at the latter city. Sidney in Australia, and Noumea in New Caledonia, are also infected at the present time.

Manila, Honolulu and San Francisco have successively become infected. In all these places the disease, with but very few exceptions, has attacked the native or Oriental population. The extinction of the plague in the Hawaiian Islands since the end of March is a splendid demonstration of what energetic, vigorous measures can accomplish. The presence of the plague since March 8 in Chinatown, in San Francisco, is readily recognized as a most serious condition, especially after the courts have granted an injunction restraining the health officers from carrying out the necessary vigorous preventive measures.

A few words should be given here to the overland dissemination of the disease. Europe is not merely threatened by infected ships

which may come from China, India, Eastern Africa or South America. The overland routes from China and India are fully as grave a source of danger. Indeed, as will be presently shown, these are the routes along which the great epidemics of cholera and plague have always traveled in the past.

One of these great caravan routes leads from Lahore in Punjab through Afghanistan into the Russian province of Turkestan, where it meets the Trans-Caspian railway. This railway begins at Samarcand in Turkestan and passes through Bokhara, Merv, Askabad and ends at Uzun Ada on the Caspian Sea opposite Baku. Early in 1899 an outbreak of the plague occurred near Samarcand, undoubtedly brought up from India. The precautions taken to prevent the spread were entirely successful, and although no accounts have been officially published as to the means employed, nevertheless it will be seen that the radical procedure employed by Loris Melikoff some twenty years ago was again resorted to. Inasmuch as the entire village was said to be afflicted it was surrounded by troops, and no one was allowed to enter or leave. The village and all that it contained was destroyed by fire. With this route open continually it is evident that fresh importation must be expected sooner or later.

Apparently a new plague focus, independent of that in Yunnan and Hong Kong, has been recently discovered in Manchuria. The plague seems to have existed in this province for more than ten years under the name of Tarabagan plague, and is believed to be spread by a rodent, the *Arctomis cobuc*, which is subject to a hemorrhagic pneumonia. The presence of such an independent endemic focus in Manchuria indicates the possibility of the spread of the disease by caravan to Lake Baikal, and thence by the Siberian railroad to Russia. Indeed, the epidemic of pneumonic type which began July, 1899, at Kolobovka, in Astrakhan, while it may have been imported from Persia, might also owe its origin to the Mongolian focus.

Russia, however, is not the only country endangered by the overland transmission of the disease. There are commercial highways which lead from Northwestern India through Baluchistan and Persia to the Caucasus, and through Turkey to Constantinople. Grave danger threatens from this source, and more especially from the cities along the Persian Gulf. Two important cities here are already infected, namely, Bushire, in Persia, and Bassorah on the Tigris, in Turkey. It would appear as if Turkey and Persia would escape with difficulty from a visitation of this dread disease.

Such, then, is the geographical distribution of the present outbreak of the plague. This, an apparently extinct disease, has suddenly reappeared and given evidence of its power to spread death and desolation. Fortunately, however, modern sanitary precautions are quite able to restrict its progress, provided they be applied at the proper time and place. Filth and overcrowding, protracted wars and famine, have been the powerful allies of the plague in the past. Through their aid this disease has made a deep impression upon the pages of history. It may not be out of place, therefore, to turn from the present outbreak of the disease and trace its grewsome past.

(To be continued.)

# MONTHLY REVIEW.

## Pharmaceutical Technique.

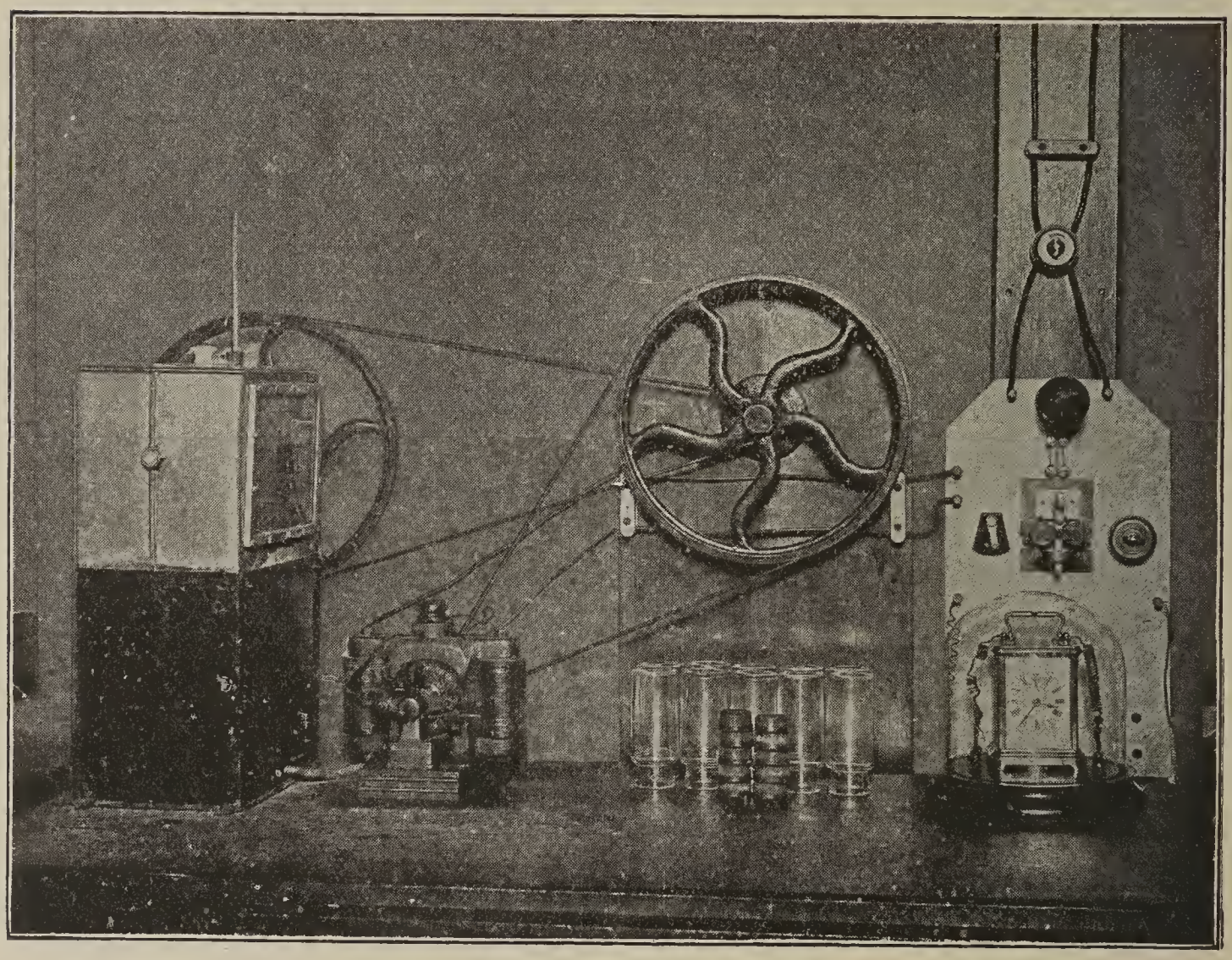
**An Apparatus Constructed to Perform Accurately and Properly the Shaking Required in the Pharmacopœial Test for Pepsin.**—The United States Pharmacopœia in describing the method for testing pepsin specifies among other things that the mixture of acid, water, egg albumen, and pepsin shall be "shaken gently every fifteen minutes." This is such an indefinite statement that it permits considerable latitude in the matter of agitation and thus renders it possible to obtain quite a diversity of results with any given sample of pepsin. In order to obviate the "personal factor" and to insure absolute uniformity of conditions in successive tests, Dr. Francis has constructed the ingenious apparatus herewith depicted for agitating pepsin during the test digestion. This apparatus consists of:

1. A water-bath with revolving rack in which are placed the bottles containing the prescribed amount of egg albumen, acidulated water, and pepsin. The bottles are immersed in water and kept constantly at a temperature of 38° or 40° centigrade.

2. An electrical motor geared to differential pulleys and finally connected with a pulley attached to the bottle-rack, so constructed as to cause a revolution of the latter at a proper speed.

3. An electrical switchboard. This switchboard has mounted upon it a clock which closes the circuit from an electrical battery at exact periods of fifteen minutes, thus allowing the battery circuit to pass through the coils of the relay shown in the center of the board. The magnetic effect of the passage of this current pulls down the armature and thus completes the circuit from the motor to the general lighting system. The electrical contacts of the clock are so arranged that the armature is depressed for exactly one-fourth of a minute, which means that the motor is caused to revolve for

exactly one-fourth of a minute; the contacts being then broken, the armature is allowed to rise and the motor is immediately stopped. The high speed of the motor is reduced so as to impart to the bottle-rack contained in the water-bath an even, gentle motion. The other pieces of apparatus arranged upon the switchboard are simply the necessary switches, safety fuses, and a red indicator lamp, which glows when the machine is operating.



A slight consideration of the photograph and the above description of the operation of this contrivance show that by its means a very accurate, uniform and gentle operation is obtained, such as could not be duplicated by any personal effort on the part of the chemist, no matter how careful he might be. In consequence the results obtained are uniformly reliable.

[Bulletin of Pharmacy, 14, p. 331.] *O. S.*

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## New Remedies.

**Fersan.**—According to Jolles this is a ferruginous para nuclein compound obtained from the red blood corpuscles obtained from serum with the aid of a centrifuge. It contains iron, and phosphorus in organic combination and 88.8 percent of albumen, principally in form of acid albumen. It is used as nutrient. [Apt. Ztg., 15, p. 659.] *E. K.*

**Asterol and Thiocol.**—Schaerger discussed new remedies in general at the V. d. N. A. and reports on the above two in particular. Asterol is a double salt of p-phenolsulphonate of mercury and ammonium tartrate, $(C_6H_4.OH.SO_3)_2Hg+4C_4H_4O_6(NH_4)_2+8H_2O$. The method of preparation is given.

Thiocol is the potassium salt of the non-poisonous sulphonate of guaiacol prepared by sulphonation below 70°.

Both are antiseptics. to be used in combatting tubercular and sexual diseases. [Apt. Ztg., 15, p. 688.] *E. K.*

**Dormiol.***—In his search for a hypnotic which would embody all the valuable features presented by chloral hydrate but free from the serious drawbacks of the latter, G. Fuchs† was led to prepare a compound of chloral and amylene hydrate. Experiments carried out with this new preparation demonstrated such efficiency that the author felt constrained to bring it to the attention of the medical profession.

The new compound, to which the name dormiol has been given, is chemically dimethylethylcarbinol-chloral or amylene-chloral, and has the formula $CCl_3.CH(OH).O.(CH_3)_2C(C_2H_5)$. It occurs as a colorless fluid, of penetrating, mentholic odor, and cooling, burning taste. Its specific gravity at 15° C. is 1.24, and it boils without decomposition under normal pressure as well as in vacuo. With alcohol, ether, acetone, chloroform, benzene, and fatty and ethereal oils it is miscible in every proportion. On shaking with water it forms a milky fluid which, on standing, separates into two layers—water and dormiol. On allowing layers of equal volumes of water and dormiol to remain undisturbed for some time, a gradual amalgamation takes place, the two combining to form an intermediate layer; and finally a perfect mixture of the two results in the formation of a clear solution. On adding 4 to 5 volumes of water to this, the dormiol is thrown out of solution, unchanged. On shaking for a short time, however, a perfect and permanent union again results.

Fuchs, in connection with E. Koch,‡ carried out a large number of comparative tests on animals, which demonstrated not only the superiority, but also the innocuousness of dormiol as compared with chloral hydrate and other hypnotics, such as sulfonal, trional, paraldehyde, and amylene hydrate.

These tests have since been confirmed by a number of clinical investigators, who unanimously affirm that patients who took dormiol never experienced any bad effects from it, but, on the contrary, felt well and bright. The digestive apparatus does not appear to be deleteriously influenced by

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* A paper on this subject was read by Fuchs in the Section on Pharmacy and Pharmacognosy of the Ver. d. Naturf. u. Aerzte. See Apt. Ztg., 15, p. 681; also Pharm: Ztg., ——, p. ——.

† Zeitschr. f. angew. Chem., 1899, No. 49.

‡ Münch. med. Wochenschr., 1898, No. 37, p. 1173.

dormiol; on the contrary, some observers have found it to be improved by the remedy.

So far as the promptness of its hypnotic effect is concerned, this is vouched for by a number of clinicians, one of whom has found dormiol to produce sleep in the insane within one-half to one hour, in 75 percent of the cases in males and in 80 percent in females; while another reports having had success in 84 percent of sane patients treated with it.

Owing to the fact that dormiol is best administered in diluted form, it is marketed only in 10 p. c. aqueous solution, which is at once convenient to dispense and pleasant to take. [Merck's Archives, 2, p. 344.] *E. K.*

**Arenose** consists of a mixture of oatmeal and soluble malt extract, and is used as a nourishing tonic for invalids.

[Ztschr. d. a. o. Ap. Ver., 54, p. 634.] *W. O. R.*

**Iodolen** is an iodine-containing preparation of egg albumen, with Iodol as a base, and contains 36 p. c. of iodine. It is a yellowish, coarsely granular, but not lumpy powder possessing a pleasant odor, and practically tasteless. It is decidedly stable, when removed from contact with air, when it remains unchanged for some time at 100° C. It is insoluble in the general solvents. Dilute alkali solutions dissolve it, with gradual hydrolysis of the egg albumen. It is intended for internal use as a substitute for the general iodine preparations, and does not cause the usual so-called iodine intoxication. It also serves as a very good general external antiseptic.

[Arch. f. Derm., 52, No. 1, through Pharm. Zeitg., 45, p. 535.] *W. O. R.*

**Iod-eigon-sodium** was formerly designated as *a-eigon-sodium*, and contains 15 p. c. of iodine and is soluble in water. It is intended for internal purposes in doses of 0.3 to 0.5 gm. in place of the alkali iodides. It also appears in various pharmaceutical preparations, as tablets of various strengths, syrup, wine, malt extract, etc. [Pharm. Zeitg., 45, p. 398.] *W. O. R.*

**Portoïn** is formaldehydicotoïn or methylenedicotoïn, having the structural formula, $CH_2<^{C_{14}H_{11}O_4}_{C_{14}H_{11}O_4}$. It is prepared by the interreaction of formaldehyde upon cotoïn, and is a yellow crystalline powder, tasteless, but possessing a cinnamon-like odor. It is readily soluble in alkalies, chloroform, acetone and acetic acid, but difficultly soluble in alcohol, ether and benzene and insoluble in water, m. p. 211—213°. Portoïn is directed to be used as an intestinal antiseptic, and germicide in doses of 6.23 gm. three times a day in the form of an emulsion. [Pharm. Post, 33, p. 206.] *W. O. R.*

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## Pharm. and Pharmacognostical Chemistry.

**Guaiac Blue and Aloin Red.**—Schaer points out the close relation existing between these compounds and discusses their origin, preparation and chemical character. [Apt. Ztg., 15, p. 669.] *E. K.*

**On Delphinine.**—This alkaloid, though known since 1819, has not been thoroughly investigated chemically. A preliminary report is made by Katz. Keller's method of assay is stated to have failed utterly. From 50 kg. of seed 30 g. of alkaloid were obtained. The alkaloid contains 20.7 percent methorz, determined according to Füssel, or four $OCH_3$ groups to the molecular weight 400. As one product of hydrolysis, benzoic acid was obtained. [Apt. Ztg., 15, p. 670.] *E. K.*

**Assay of Mustard Seed, Mustard Paper and Mustard Oil.**—E. Dieterich claims priority for his assay as silver sulphide. Gadamer's method is stated to give similar, but somewhat lower results, whereas Grützner's method yields results that are too low. The oil is to contain about 30 percent sulphur. The examination of the seed is to include the assay of volatile oil, of fatty oil by means of petroleum ether extraction, assay of the residue, ash determinations of the original powder and of the extracted powder. The method of assaying the paper according to the new German Pharmacopœia is criticised. [Apt. Ztg., 15, p. 658.] *E. K.*

**Physico-Chemical Examination of the Solutions of Uric Acid and its Salts.** Uric acid was discovered by Schuh and its constitution has been established by Fischer. Its physico-chemical properties, however, are but little understood. Inasmuch as a rational therapy of diseases caused by the deposit of uric acid in the human system is possible only after its properties in solutions are well known, these were studied by Paul and His. The degree of dissociation of the acid and of its salts in simple and complex solutions was determined and the conclusion is arrived at, deposited uric acid is not rendered more soluble by the administration of potassium or lithium salts. If these are therapeutically advantageous, their action must be explained in some other way. [Apt. Ztg., 15, p. 658.] *E. K.*

**The Active Constituent of Peru Balsam and its Synthesis.**—According to Erdmann, verifying the results of Thoms, benzyl benzoate and benzyl cinnamate occur in Peru balsam in the ratio 60:38. Both are regarded as the active constituents of the balsam, being similar in their action, the free acids of the balsam acting as irritants and producing eczema. Benzyl benzoate is produced synthetically and sold under the name Peruscabin, a solution of it in castor oil as Peruol. The cinnamate is more expensive. [Apt. Ztg., 15, p. 659.] *E. K.*

**Relation of the Electrical Conductivity of Blood-serum to its Alleged Bactericidal Power.**—It is asserted that blood-serum possesses certain bactericidal properties, and many experiments tend to show that these properties are lost when the serum is heated to from 55—60° C. Lootz and Tallant have attempted to study this question by the application of physical-chemical methods. The method chosen was that of electrical conductivity.

Dog serum was used and its conductivity determined before and after heating for 1 hour to 57° and again cooling. The results in both cases were the same within the limits of experimental error, thus showing that the changes which take place by heating to 57° are not of a physico-chemical nature which can be shown by the conductivity method.

[Johns Hopkins Hospital Bulletin, 11, p. 220.] *O. S.*

**Oils of Neroli and Petitgrain.**—Jeancard and Satie have made an interesting series of experiments with neroli and petitgrain oil during the harvest of 1899. They find that the yield of neroli oil increases as the harvest progresses, and is favorably influenced by fine weather, a markedly smaller product being obtained when rain prevailed; the lowest yield, 0.88 gm. per kilo of flowers, was then recorded, while the highest yield, 1.18 gm. per kilo, was reached at the end of the harvest during fine weather. The following figures represent the mean of the observations of thirteen samples of neroli oil examined at different periods on the spot during the distillations. Yield, 0.963 gm. per kilo; sp. gr., 0.8758; rotation, +4°08′; esters (as linalyl acetate), 15.19 percent. In four samples of Bigarade petitgrain oil the extreme limits were, sp. gr. from 0.8866 to 0.8946; rotation, —5°19′ to 2°49′; esters, 47.14 to 67.81 percent. A specimen of lemon petitgrain had the sp. gr. 0.8768; rotation, ×13°20′; esters, 12.25 percent; while a specimen of mandarin petitgrain showed the sp. gr. 0.8768; rotation, +6°14′; esters, 45.06 percent. The authors endeavored by determining the amount of free acid formed during the distillation of neroli to throw some light upon the partial saponification of the esters which undoubtedly takes place during the operation. The results obtained were, however, too high. They found that fresh orange flowers alone, when merely macerated in water, develop a marked and, to a certain point, increasing acidity. That some destruction of esters does take place during distillation is, however, shown by comparison with neroli oil obtained by the cold maceration process with vaseline oil and subsequent extraction with alcohol. By this means an oil was obtained containing 23.76 percent of esters, and having the sp. gr. 0.922. The odor of this oil, and also of fresh orange flowers, is quite different from ordinary neroli oil.

[Pharm. Journ., 65, p. 237; from Bull. Soc. Chim., 23, p. 605.] *E. K.*

**Ash in Drugs.**—C. G. Moor and M. Priest have determined the ash of a number of B. P. drugs, and in a few cases the figures they publish seem to indicate that there should be some modification in the official limits—as, for instance, in cardamoms and colocynth pulp. It is suggested that the official ash limits might with advantage be considerably extended generally. For numerous details see the original.

[Pharm. Journ., 65, p. 109; C. & D., 57, p. 172.] *E. K.*

**The Pharmaceutical Plants of Jamaica.**—T. H. Wardleworth deals with some pharmaceutical and economic plants of Jamaica. As the result

of a visit to that island he is of opinion that pharmacists would do well to attempt to obtain from British colonies supplies of many drugs which at present come from other parts of the world. The article in the C. & D. is illustrated. [Chemist & Druggist, 57, p. 177.] *E. K.*

**Juice of Hura Crepitans.**—J. J. Surie has succeeded in isolating the toxic principle of the milky fluid of *Hura crepitans* in the form of a volatile colorless fluid, which he calls hurin. It has a sharp burning taste, is insoluble in water, but soluble in alcohol, ether and chloroform. It is not identical with cardol, but appears to be closely related to the acid of croton oil. Although volatile, hurin cannot be isolated by distillation, as it undergoes decomposition. To obtain it, the juice was extracted with ether, the ether extract purified with alcohol and lead hydroxide, from the filtrate of which impure hurin was separated, and subsequently purified by further treatment with ether. In addition to this body, the juice contains a considerable amount of caoutchouc. The watery portion of the juice, after coagulation and filtration, is free from toxic properties.

[Pharm. Journ., 65, p. 261; from Nederl. Tijdsch. v. Pharm., 1900, p. 107.] *E. K.*

**Gentiopicrin.**—Since its discovery in 1862, by Kromayer, gentiopicrin, the bitter glucoside of *Gentiana lutea*, has not received any attention from chemists. E. Bourquelot and H. Hérissey have lately succeeded in preparing it in quantity in a pure state from fresh gentian by the following relatively simple process:—The fresh sliced root is dropped into boiling alcohol 95 percent), cohobated with the menstruum for half an hour; cooled, decanted and expressed. The solvent is then removed by distillation, the slightly acid residue neutralized with calcium carbonate, allowed to stand for some hours, filtered, evaporated to a syrupy consistence and set aside, when crystals slowly appear. In about fifteen days crystallization is complete, a semi-solid mass of felted needles surrounded by a treacle-like mother liquor being obtained. The mass is drained on the filter pump, dried over $H_2SO_4$, and purified by recrystallization from a menstruum of equal volumes of chloroform and alcohol (95 percent) under a layer of ether. This is conducted in a double-bottomed flask, the filtered alcohol chloroform solution being introduced first so that the level of the liquid rises only a few mm. above the upper diaphragm. Then a layer of ether, equal in volume to the solvent, is cautiously introduced by means of a pipette, without mixing the two liquids. As diffusion takes place, crystals of gentiopicrin form at the line of junction, while amorphous impurities are deposited at the bottom of the flask. The pure glucoside, thus obtained in pale yellow needles, does not directly reduce Fehling's solution. It is strongly lævogyrate, the rotation being $\alpha_D = -196°$. Its properties are under investigation.

[Pharm. Journ., 65, p. 261; from C. r., 131, p. 113.] *E. K.*

**Alkaloid-containing Compositæ.**—Twelve years ago the question was asked by Schwendener why so many *Compositæ* were cultivated year in and year out in many botanical gardens though they were of no interest to any one. If the taxonomist has not been able to create an interest in this Family on the part of this well-known German botanist, possibly the phytochemist may be more successful. M. Greshoff of the Colonial Museum at Harlem, a year ago published some of his work on the alkaloid-containing *Compositæ*. More recently he published a review of the literature of the subject, also a second list of genera and species in which alkaloids have been found. So far 150 genera have been examined and alkaloids have been found in 50, of which 30 were first shown to contain an alkaloid or alkaloids by Greshoff. Although this is a considerable number, he does not consider the material sufficient to draw any general conclusions. According to Durand's Index, the family contains 825 genera in 13 subfamilies:

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1. Vernoniaceæ, | 41 | genera, | of | which | 0 | have | been | shown | to contain | alkaloids. |
| 2. Eupatoriaceæ, | 43 | " | " | " | 2 | " | " | " | " | " |
| 3. Asteroïdeæ, | 102 | " | " | " | 6 | " | " | " | " | " |
| 4. Inuloideæ, | 151 | " | " | " | 3 | " | " | " | " | " |
| 5. Helianthoideæ, | 148 | " | " | " | 14 | " | " | " | " | " |
| 6. Heleniodeæ, | 62 | " | " | " | 1 | " | " | " | " | " |
| 7. Anthemidæ, | 48 | " | " | " | 5 | " | " | " | " | " |
| 8. Senecioideæ, | 49 | " | " | " | 2 | " | " | " | " | " |
| 9. Calendulaceæ, | 8 | " | " | " | 1 | " | " | " | " | " |
| 10. Arctotidæ, | 16 | " | " | " | 0 | " | " | " | " | " |
| 11. Cynaroideæ, | 38 | " | " | " | 6 | " | " | " | " | " |
| 12. Mustisiaceæ, | 59 | " | " | " | 0 | " | " | " | " | " |
| 13. Cichoraceæ, | 60 | " | " | " | 10 | " | " | " | " | " |

For details the reader will have to be referred to the originals.

[Ber. d. d. Pharm. Gesellsch., 10, p. 148.] *E. K.*

**Proteolytic Diastase of Malt.**—A. Fernbach and L. Hubert state that they have determined by experiment what had previously only been assumed, viz., the presence in malt of a proteolytic diastase. They compare it to the saccharifying diastase; the result, however, being the formation of peptone instead of dextrin, and of amides instead of maltose.

[Pharm. Journ., 65, p. 261; from C. r., 130, p. 1783.] *E. K.*

**Cytisine Derivatives.**—The crude base obtained from the seed of *Cytisus laburnum* to the extent of about 1.5 percent was purified by A. Ranwerda by distillation in vacuo: at 228° and 2 mm. it passed over and condensed as a colorless liquid which deposited acicular crystals on cooling. Recrystallized from absolute alcohol it was obtained in clear rhombic prisms of 1.0046 specific gravity.

**Methyl Cytisine** was obtained in the form of hydriodide, $C_{11}H_{18}N_2O.CH_3.HI+2H_2O$, by heating powdered cytisine with methyl iodide in a sealed

tube. On treating this salt with caustic soda and chloroform, methyl cytisine was obtained as a yellow crystalline mass. By recrystallization from petroleum spirit or alcohol it gave colorless needles and by recrystallization from water, tabular crystals.

**Ethyl Cytisine** was obtained in the same way, and the chloroform solution left, on evaporation, a thick yellow syrup, which, by distillation in vacuo, yielded an almost colorless liquid that did not crystallize.

**Cetyl Cytisine** recrystallized from alcohol in white needles, melting at 55—56° C. and insoluble in water.

[Pharm. Journ., 65, p. 261; from Nederl. Tijdschr. v. Pharm.] *E. K.*

**The Adulteration and Analysis of Arsenical Insecticides.**—J. K. Haywood discusses the composition and adulteration of arsenical insecticides and the result of a comparison of the methods of analysis proposed for them. Arsenical insecticides may be adulterated in three ways. 1. By substituting some colored substance to represent the compound. For example, a powder labelled Paris green was found to consist of Prussian blue, chrome-yellow and clay or chalk. 2. Substances may be added to increase their weight. Thus, Paris green is often adulterated with calcium sulphate, calcium carbonate, lead chromate, etc. 3. They may be deficient in combined arsenous oxide. Many contain enough arsenic to include them in the class of high-grade articles, but this arsenic is often present as free arsenous oxide and not in the combined state as it should be.

Paris green is supposed to be copper acetoarsenite and to contain 31.29 percent copper oxide, 58.65 percent arsenous oxide, and 10.06 percent acetic acid. Published analyses show a range 41.54 to 68.59 percent arsenous oxide and often one-half of the arsenic was in the free state. Other adulterations found were clay, calcium sulphate, barium sulphate, lead sulphate, lead chromate and calcium carbonate.

Scheele green is supposed to be copper hydrogen arsenite and to contain 42.37 percent copper oxide, 52.32 percent arsenous oxide and 4.81 percent water. The adulterations noted were about the same as for Paris green; one specimen contained copper and arsenic in nearly theoretical proportions, but 17 percent of the arsenous oxide was in the free state.

London purple is a by-product in the manufacture of aniline dyes and is thought to be composed mainly of calcium arsenite with some coloring impurity, mostly rosaniline arsenite. Paris purple and English purple have practically the same composition. Analyses here too show the presence of free arsenous oxide.

White arsenoid is supposed to be barium arsenite. A recent analysis showed barium carbonate, chloride and oxide, and all the arsenic as free arsenous oxide.

Pink arsenoid is chiefly lead arsenite and was found unadulterated.

Green arsenoid is copper arsenite and was found to contain considerable free arsenous oxide.

Paragrene contained 23.46 percent copper oxide, 40.60 percent arsenous oxide, about one-half of which was in the free state, and 19.31 p. c. gypsum.

The author recommends the following methods for the examination of Paris green and Scheele green: 1. Determine water by drying at the temperature of boiling water for twelve to fifteen hours. 2. Determine total arsenous oxide by the method of Thorn Smith.* 3. To determine uncombined arsenous oxide, treat 1 gm. of the sample with 500 cc. of water in a stoppered flask for 2 weeks (!), agitating occasionally each day, and then find the dissolved arsenous oxide in an aliquot portion by titrating with volumetric iodine after the addition of sodium bicarbonate. 4. To determine copper, wash the copper oxide, obtained in 2. when the sample was boiled with sodium hydroxide, well with hot water, dissolve it in hot dilute nitric acid and add water to make 250 cc. 50 cc. of the solution is made alkaline with sodium carbonate, then slightly acid with acetic acid and then a large excess of potassium iodide added. The iodine, liberated according to the equation: $2CuO + 4KI = Cu_2I_2 + 2K_2O + I_2$, is determined with volumetric sodium thiosulphate. [Jour. Am. Chem. Soc., 22, p. 568.] *W. A. P.*

**The Detection of Urobilin in Urine.**—Th. Roman and C. Delluc recommend the following test for urobilin. 100 cc. of urine to which are added 8—10 drops of strong hydrochloric acid are shaken with 20 cc. of chloroform. The chloroform is drawn off and upon 2 cc. of this chloroform solution is poured an alcoholic solution of zinc acetate, containing 1 gm. zinc acetate in 1000 cc. of 95 percent alcohol. In the presence of urobilin a green zone appears between the two liquids.

[Chem. Centralbl., 71, II, p. 498; from Journ. Pharm. Chim., 12, p. 49.] *W. A. P.*

**The Examination of Balsam of Peru.**—In the annual report of Caesar & Loretz the purity tests of the new German Pharmacopœia are discussed. The adoption of a saponification number, of a fixed cinnamein content and an ester number for the same is a rational improvement on older methods even if these determinations require some skill and analytical training. They regret, however, that the nitric acid test† has been dropped, since this simple and quick test has always given a fair indication of the quality of the drug.

They report upon ten large lots imported from San Salvador. The specific gravity varied from 1.141 to 1.153, the cinnamein from 56.66—66.07 percent and the ester number of the cinnamein ranged from 220 to 236.

[Caesar & Loretz, Geschäftsbericht, Sept. 1900.] *W. A. P.*

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* Jour. Am. Chem. Soc., 21, p. 769.
† Pharm. Rev., 17, p. 523.

**The Valuation of Creosote.**—The active constituents of creosote all contain methoxyl groups while the less valuable monatomic phenols do not. Accordingly, B. Hafner and W. Kreissl base a valuation of creosote upon its methoxyl content, determined according to the method of Zeisel. They found that the methoxyl content bore a constant relation to the specific gravity.

The density of creosote should be at least 1.07, not less than 75 percent, should distill at 200—220° C. and its methoxyl number be at least 12 p. c., corresponding to a minimum of 48 percent of guaiacol.

[Chem. Centrlbl., 71, II, p. 497; from Zeitschr. Oesterr. Apoth. Ver., 38, p. 653.] *W. A. P.*

**Digitalis Leaves, Germ. Pharm. IV.**—For some years past Caesar & Loretz have adopted a digitoxin standard for digitalis leaves, and, having found this to give a fair indication of the quality of the drug, they regret that the new German pharmacopœia does not even prescribe a quality test for digitoxin. Further, the direction to collect the leaves of flowering plants has been retained, although it has been repeatedly demonstrated that the leaves taken from wild plants not in blossom are equally rich in digitoxin. They report the assay of the various lots purchased during the year, which shows a range from 0.220—0.409 and an average of 0.280 percent of pure digitoxin. [Caesar & Loretz, Geschäftsbericht, Sept. 1900.] *W. A. P.*

**The Alkaioidal Value of Ipecac.**—Caesar & Loretz report some assays of ipecac root. The assays were made according to the method of Keller, using, however, ether instead of the ether-chloroform mixture. The alkaloids were weighed and then titrated; two figures thus obtained are almost identical in each case. Nineteen lots of Rio ipecac were examined and ranged from 2.28 to 3.36 percent alkaloid. Forty-eight lots of Carthagena ipecac showed a range of 2.31 to 3.45 percent alkaloid. The new German Pharmacopœia permits a minimum of 2.03 percent alkaloid.

[Caesar & Loretz, Geschäftsbericht, Sept. 1900.] *W. A. P.*

**The Action of Iodine on Aconitine and Caffeine.**—C. Kippenberger publishes some interesting experiments relative to the formation of periodides of caffeine and aconitine. In previous publications he has shown that the reaction between alkaloidal salts and iodine-potassium-iodide solutions is more complex than shown by the equation commonly used to indicate the reaction: Alk. HCl + KI + Ix = Alk, HI, Ix + KCl. Thus he claims, and his experiments with caffeine and aconitine support this, that, owing to the strong combining tendency of iodine to form insoluble periodides with alkaloids, the combining relation of alkaloid and acid is overcome and the free iodine reacts to form alkaloid hydrogen iodide. At the same time hydrogen hypoiodite and hydrogen iodate form and act upon the potassium, hydrogen iodide respectively. The results, which can not well be abstracted,

show that not only does the amount of "additive-iodine" absorbed vary with the conditions of the experiment, but that also the amount of potassium iodide, or hydrogen iodide respectively, which disappears during the experiment, is variable.

Referring to the employment of iodine solution for the estimation of these alkaloids he concludes:

Caffeine and aconitine may be estimated with iodine-potassium-iodide solution of any concentration, preferably about twentieth normal, if the solution used is first standardized upon weighed quantities of the alkaloids. With caffeine a large excess of iodine solution must be added to completely precipitate it.

Aconitine can be estimated more accurately by titration with volumetric acid solution, using azolithmin, iodoeosin, haematoxylin or cochineal as indicator. [Zeitschr. f. anal. Chem., 39, p. 435.] *W. A. P.*

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# Literary.

## Books and Pamphlets Received.

Chemist & Druggist—London. The art of dispensing. A treatise on the methods and processes involved in compounding medical prescriptions. First edition 1888. Sixth edition, revised and enlarged by Peter MacEwan. pp. VIII, 490. 1900. 5 s. 6 d. net.

—— Veterinary Counter Practice. A treatise on the diseases of animals and the most suitable remedies for them, written expressly for chemists and druggists by qualified and experienced members of the Royal College of Veterinary Surgeons. Second edition. pp. 344. 1900. 3 s. 6 d. net.

Verlag von Gustav Fischer—Jena. Anleitung zur mikroskopischen Untersuchung der vegetabilischen Nahrungs- und Genussmittel von A. F. W. Schimper. Zweite umgearbeitete Auflage, mit 134 Abbildungen. pp. 158. 1900. Broch. M. 4.00; geb. M. 5.00.

Verlag von Ernst Guenther—Leipzig. Kommentar zum Arzneibuch für das Deutsche Reich. Pharmacopœa Germanica Ed. IV. Mit Zugrundelegung des amtlichen Textes sowie einer Anleitung zur Massanalyse. Im Anschluss an den Schlickum'schen Kommentar bearbeitet von C. Jehn und E. Crato. Dritte Lieferung. pp. 80. 1900.

Laird & Lee—Chicago. You and your Doctor. How to prolong life. A practical book on health and the care of it. A fearless expose of all quacks and frauds within and without the medical profession by W. B. Doherty. Illustrated, pp. 260. 1900. $1.00.

Director Wellcome Chemical Research Laboratories — London.

1. The constitution of pilocarpine, part 1. By H. A. D. Jewett. From the Transactions of the Chemical Society, 1900. pp. 10.

2. The composition and determinations of cerium oxalate, by F. B. Power and F. Shedden. pp. 16. From the Journal of Chemical Industry, 1900.

3. Researches on morphine, part 1. By S. B. Schryver and F. H. Lees. From the Transactions of the Chemical Society, 1900. pp. 15.

Author—Madison. Toxic action of acid sodium salts on *Lupinus albus* by Louis Kahlenberg and R. M. Austin. pp. 20. Reprinted from the Journal of Physical Chemistry, October 1900.

Author—Boulder, Colo. The seed and seedling of the western larkspur (*Delphinium occidentale* Wats) by Francis Ramaley. Reprinted from the Minnesota Botanical Studies, August 1900. pp. 5.

Author—Leipzig. Ueber das Vorkommen von Methylanthranilsäuremethylester im Mandarinenöl. Von Heinrich Walbaum. Separat Abdruck aus dem Journal für praktische Chemie. 1900. pp. 6.

J. H. Beal—Scio, O. A general form of Pharmacy Law as amended and approved by the American Pharmaceutical Association.* May, 1900. pp. 16.

U. S. Dept. of Agr.—Washington. Division of Botany. Rubber cultivation for Porto Rico. Circular No. 28. pp. 12.

Author—San Francisco. Cripples. By W. M. Searby. pp. 15. 1900.

Geol. and Nat. Hist. Survey of Minn.—Minnesota Botanical Studies. Second series, part IV, pp. 184. 1900.

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* Copies of this can be had upon application to Prof. J. H. Beal, Scio, Ohio.

## Reviews.

FRIEDRICH WÖHLER. Ein Jugendbildniss in Briefen an Hermann von Meyer. Herausgegeben und mit Anmerkungen versehen von Georg W. A. Kahlbaum. Ein Bd., pp. 97. Verlag von Johann Ambrosius Barth. 1900. M. 2.40, geb. M. 3.40.

Students of chemical history have welcomed the monographs on the history of chemistry that have been edited by Professor Kahlbaum of Basel during the last few years. Each one of them has been a valuable addition to our knowledge of the history of our science. Those who really love the past for itself as well as for the light it throws on the present and on the future development of chemistry will especially welcome this number.

Liebig is the brilliant chemist whose personality as well as his chemical achievements has commanded the admiration of all who know of him, no matter how slight their acquaintance may be. Through the "Briefwechsel" between Liebig and his contemporary and friend, Wöhler, which was edited in 1888 by the late A. W. v. Hofmann, we have been able to get a deeper insight into the character of the latter and we have been charmed by the study of this personality. Whereas Liebig conquers the young student of chemistry immediately, Wöhler grows on us as we grow older.

The letters which Wöhler wrote at the age of about nineteen, when a "Primaner" at the Gymnasium at Frankfurt, reveal to us a zeal for the study and a knowledge of chemistry that is astounding if we take into consideration the difficulties under which he labored. We begin to appreciate why he never attended a course of lectures on chemistry at a German university.

We are additionally thankful to the editor for not having doctored the German of the correspondence. The very errors of the hastily written letters enable us all the more to place ourselves back into the period when young Wöhler was writing, and make the whole vivid and real. We hope that both editor and publisher of these excellent monographs feel more than compensated in the good work they are doing in elevating our beloved chemistry out of what might be called the materialistic tendencies toward which she is, by virtue of her nature, inclined to drift. This volume is dedicated to the Kgl. Gesellschaft der Wissenschaften of Göttingen in commemoration of the hundreth anniversary of the birth-day, July 31, of Fr. Wöhler, who for many years was the Permanent Secretary of this society. *E. K.*

FRAUEN IM REICHE AESKULAPS. Ein Versuch zur Geschichte der Frau in der Medizin und Pharmazie unter Bezugnahme auf die Zukunft der modernen Aerztinnen und Apothekerinnen von Hermann Schelenz. Ernst Günther's Verlag, Leipzig. Broschüre, pp. IV, 76. 1900.

For a number of years the author has been collecting data for a larger work on the history of pharmacy and incidentally paid some attention to the role which woman has played in the history of medicine and pharmacy. At the Munich meeting of the Society of German Naturalists and Physicians he delivered a lecture on the above subject. This lecture has since been extended into a monograph. Such is the history of the brochure before us.

The eighty printed pages contain much information carefully collected and compiled. Woman everywhere, at least in civilized countries, is demanding equal educational opportunities with man. She is no longer content to compete with him merely as factory girl or as saleswoman, but she demands admission even to the learned professions. The subject of this brochure and its contents may well, therefore, excite our interest.

No doubt, the sarcastic insinuations with which the pages of this brochure abound, have been a source of keen delight to many a German apothecary. The spirit of selfishness still makes many men blind toward the rights of women. The question is not so much whether woman is to have the right to enter pharmacy or medicine, or law, or even the ministry; but whether she herself is to have the privilege of deciding what she will do or not do, or whether man is forever to dictate the sphere of activity which in his eyes is becoming to her.

One might as well recall the fact that among certain peoples woman was classed with swine and dogs, three categories of living beings who were not admitted to the temples, and use this historic fact as an argument against the position of women in the modern Christian church, as to present a medley of fact and fiction such as we have patiently plodded through from beginning to end and draw from it the conclusion that women are unfit to practice medicine and pharmacy. Whatever the outcome of our present tendencies may be, literary productions like the one under consideration will not render secure to man his assumed and selfish dictatorship over woman.

The brochure is worth reading, however, as showing what is still possible in this direction at the close of our enlightened nineteenth century. *E. K.*

DIE PFLANZENALKALOIDE UND IHRE CHEMISCHE CONSTITUTION. The Plant alkaloids and their chemical constitution by Dr. Amé Pictet, Professor at the University of Geneva. Translated into German by Dr. Richard Wolffenstein, Instructor at the Royal Technical High School at Berlin. Second enlarged edition. Julius Springer in Berlin. One volume, pp. 444. Price bound $3.00.

The first edition of this work has been reviewed on p. 276 in volume 9 (1891) of the Pharm. Rundschau. The recently published second edition has been carefully revised and in accordance with the progress of chemical literature largely increased, representing a comprehensive survey of our present knowledge about this important class of organic compounds.

An introductory chapter containing a concise definition of the organic bases, the so-called alkaloids, and of their grouping into natural and artificial ones modified, however, by more recent investigations prefaces the main part of the volume. It also embraces a tabulated historical record of the discovery of the plant alkaloids up to the year 1835, whilst with the newer ones all such statements are included in the text with the addition throughout of special references to the original publications.

The descriptive part of the work, treating the alkaloids in the two groups of artificial and natural ones, is elaborate and comprehensive and in full accord with modern research and knowledge. It will continue to rank as the standard work in the special domain it treats, deserving the consideration and appreciation of all interested in the use as well as in a closer knowledge of the alkaloids.

A table of contents and a complete alphabetical index facilitate the ready use of the volume. Paper and print are excellent. *Fr. H.*

ANLEITUNG ZUR MIKROSKOPISCHEN UNTERSUCHUNG DER VEGETABILISCHEN NAHRUNGS- UND GENUSSMITTEL von Dr. A. F. W. Schimper, a. o. Professor der Botanik an der Universität Basel. Zweite umgearbeitete Auflage. Mit 134 Abbildungen. Jena, Verlag von Gustav Fischer. 1900.

The second edition of this "multum in parvo" work is very similar in appearance to the first edition which appeared in 1883.

It is intended for beginners in the microscopic study of foods that they may become acquainted with the detailed structure of those substances which they are likely to encounter in actual practice. The reputation of the author is sufficient guarantee that the treatment of the subject matter, the micro-technique, and the illustrations are up-to-date and reliable.

While this edition has been enlarged by only thirteen pages, the size of the page has been considerably increased. The most conspicuous feature of this edition consists of fifty-five new illustrations, part of which are original, and part reproductions from various other sources. With the exception of the half-tone copies of certain text-book cuts, the illustrations are all first class.

The text is divided into XVIII Chapters—four more than in the first edition—in which the following topics are discussed: Cereals and Starches, Coffee and Substitutes, Cacao Preparations, Tea, Tobacco, Pepper, Pimenta, Cloves, Capsicum, Mustard, Saffron, Cinnamon, Vanilla, Cardamom, Nutmeg and Mace, Ginger and Curcuma, Agar-Agar in Fruit Jellies, and Honey. Add to these the various substitutes and adulterants treated in subheads and we find fully seventy-five different substances considered with the thoroughness characteristic of the author.

Being very familiar with the first edition and having used it at one time and another in laboratory classes the writer does not hesitate in commending this little work in the highest terms as a concise guide to the student in microscopy as well as to the food expert. *J. O. Schlotterbeck.*

Die mikroskopische Analyse der Drogenpulver. Ein Atlas für Apotheker, Drogisten und Studirende der Pharmacie von Dr. Ludwig Koch, a. o. Professor der Botanik an der Universität Heidelberg. Erster Band: Die Rinden und Hölzer. 2. Lieferung. Verlag von G. Borntraeger, Berlin. 1900. M. 3.50.

The initial number or "Lieferung" of this admirable work was fully reviewed in the October number of this journal. Considering the enormous labor involved in the very detailed treatment which this subject is receiving at the hands of the author, the early appearance of the second number is indeed remarkable and of genuine satisfaction to those interested.

The drugs treated are Cortex Cinnamomi chinensis, Cortex Citri Fructus, Cortex Condurango, Cortex Frangulae, and Cortex Granati. Plates IV to IX inclusive accompany the text.

Cinnamon in three different degrees of fineness is considered with equal care and thoroughness. One of the most frequently occuring foreign substances in powdered cinnamon is the wood which adheres to the bark in the mixed commercial product termed "chips." Since the histology of cinnamon wood is generally omitted from works of this kind it is hoped that the author will find place for its consideration at some other stage.

It appears to the writer that for convenience sake it would be better if the "Erklärung der Abbildungen" were opposite the plate explained, or if that be impracticable from the printer's point of view, to designate conspicuously at the head of the page the subject, or the number of the plate, to which the explanations refer. A glance at plate IV will demonstrate at once that the explanation on the opposite page would be infinitely more serviceable if it referred to plate IV rather than to plate IX further on.

The plan of reproducing longitudinal and transverse sections on the same page with drawings of the fine powder, as shown on plates VI and VII, is an added feature in this number. The wisdom of carving these sections to patterns that permit of a fanciful arrangement of the drawings, as is done with Cortex Condurango and Cortex Frangulae, is questionable. *J. O. Schlotterbeck.*

Ueber das Ungeeignete der neuerdings für die Berechnung der Atomgewichte vorgeschlagenen Grundzahl 16,000. Vortrag gehalten in der chemischen Sektion der Physikalisch-ökonomischen Gesellschaft zu Königsberg i. Pr. von Prof. Dr. Lassar-Cohn. Brochüre, pp. 26. Verlag von Leopold Voss, Hamburg. 1900. M. 0.60.

The arguments presented by the author are principally of two classes. The arguments of the first class, which are directed against the management of the German Chemical Society, are two in number: first, that the affairs pertaining to the Hoffmann House are evidently regarded of more importance than the revision of the atomic weights; second, that the commission appointed by this society did not include an organic chemist.

In the second category of arguments the claim is made that the older atomic weight for oxygen, suggested by Berzelius, viz. 100, is

less arbitrary than the number 16, which is but an "unjustified compromise between that which all chemists desire and the rough reality." That it will be just as inconvenient to calculate with 1.01 as with 15.879. That whatever changes may be made, our atomic weight tables will be imperfect. That the demand of the analytical chemists will be complied with more satisfactorily by giving them a table with multiples than by changing the atomic weights themselves. That Professor Seubert, one of the members of the commission, is not an advocate of the change, but merely consents to it conditionally. That beginners will lose their faith in chemistry as a science if the unit of the atomic weights is tampered with. That there is no valid reason why we should make any such concession to the imperfections in the methods of chemical analysis.

One other argument, belonging to neither of the above classes, the author uses, viz. that of ridicule and sarcasm. Because the atomic weight of hydrogen is to be changed from 1.000 to 1.01 the system is termed a "limping" one, which attribute is repeatedly used. The tone of the entire address is combative rather than that of a purely scientific argument.

Whether or not we favor the change adopted not only by the Commission of the German Chemical Society but also by the International Commission of Atomic Weights, it is well to read both sides. *E. K.*

HUMORISTISCH-PHARMAZEUTISCHES JAHRBUCH nebst Glückskalender für das zwanzigste Jahrhundert. Herausgegeben von einer Anzahl hoffnungsfroher Collegen. Brochüre, pp. 64. Ernst Günther's Verlag, Leipzig. 1900. M. 1.00.

Any apothecary who reads German and desires to have a good time for an hour can purchase it for about twenty-five cents. The advantage of buying it in book-form is this, that he can hand it to some one else and thus carry out the advise of the aphorism:

"Willst wissen, was wahres Glück ist?
Mach and're glücklich, wie du's selber bist!"

Besides a calendar with some quotation regarding good fortune and good luck for every week of the year, the brochure contains several humorous essays on the pharmaceutical sciences, also numerous clippings from the "Fliegende Blätter" and similar sources. Women as pharmacists also come in for their share. From beginning to end, the contents are good reading matter for the hard worked apothecary who so often is in need of good cheer. *E. K.*

DICTIONNAIRE DE PHYSIOLOGIE par Charles Richet, Professeur de Physiologie à la Faculté de Médecine de Paris. Tome IV: C—D, pp. 953, avec 109 gravures dans le texte. Ancienne Librairie Germer Baillière et Cie, Paris. 1900.

Since we last reviewed a fascicle of this monumental work, three fascicles constituting the fourth volume have made their appearance. This volume completes the letter C, the letter D beginning in the third fascicle. Volume four contains one hundred and thirty-five primes including cross references, varying all the way from a line to a large monograph of 316 quarto pages, such as is devoted to the prime *Coeur*, a veritable volume in itself. These articles are contributed by twenty-seven specialists representing six nationalities. The larger number of these, as might be expected, are French, and of these again the majority resides in the French capital.

Of the large variety of articles, chemical subjects are most numerous, although articles belonging to physiology in a more restricted sense are given the largest amount of space. Inasmuch as the articles of a more chemical nature will naturally interest the pharmaceutical and chemical readers of this journal most, these may here be enumerated in order to convey a better idea of the contents of this volume.

The only chemical element coming within the scope of this volume is copper (*cuivre*) which receives twenty-one pages. Its occurrence, properties and principal classes of derivatives are briefly described, the bulk of the article being devoted to the physiological aspects of the subject. A general introduction is followed by a more detailed special part: The toxicity of copper and its compounds: Toxicity of copper toward lower organisms; Absorption and localization of the salts of copper in the tissues; Elimination; Copper in the organism; Uses; Toxicological investigations; Bibliography. The physiological aspect of almost any subject is of interest to most chemists and pharmacists, especially if the reader finds the material well arranged and digested by the author. So with these articles. We regret all the more, therefore, if we find any part of such an important work as this not fully up to date. Under the action of copper on inferior organisms, no mention is made of a remarkable series of experiments conducted by Kahlenberg and True in this country and also by several investigators in Germany and the possible explanation of the action. To state that the toxic action of copper appears to be due

to its combinations with the albuminoids of the protoplasm, and to call attention four lines below to the fact that Richet classes copper with those metals that are toxic in doses of $\frac{1}{100000}$ "de molécule" (gram molecule is probably meant) seems to be begging the question. Under bibliography an abstract from Tschirch in the Ber. d. d. chem. Gesellsch. is mentioned, but not his more detailed monograph on the same subject published by Ferd. Euke in 1893.

All of the other chemical articles are organic. Of hydrocarbons several are mentioned under essences or volatile oils. Of alcohols, the cresols or methyl phenols are mentioned. In this article also the valuable results of True and Hunkel have evidently been overlooked.

**Aldehydes and Ketones:** Croton-chloral, the trichlor substitution product of crotonic aldehyde, which is used as hypnotic. Cuminic aldehyde from oil of cumin. Coprinacetoxime, the condensation product of the hydrochloride of trimethylacetone and hydroxylamine, a synthetic that acts physiologically like muscarine; coprine is a similar product from monochlor acetone and trimethylamine that acts like curare.

**Acids and their derivatives:** cortepinitannic acid from the bark of pines; coumarine, a lactone or inner anhydride of coumaric acid, discovered in tonka beans by Vogel in 1820 and since found in numerous plants. Creatine, or methyl guanidine acetic acid, and its inner anhydride creatinine; the former discovered by Chevreul in 1835, the latter by Liebig in crystalline deposits from urine. Both play a very important role in animal economy. Under the title of *créatiques* (*bases*) a number of derivatives of creatine and creatinine from various sources are discussed. Of these cruscocreatinine, isolated by Gautier from beef, receives special mention. Crotonic acid, which has been found in the urine of a diabetic patient. Hydrocyanic acid, physiologically one of the most important acids, receives seventeen pages, cyanogen but three. Cynurenic or cynuric acid found by Liebig in the urine of a dog. Cystine, a compound closely related to cysteïne or amido thiolactic acid, and looked upon as an "Abbau" product of albuminous substances. Damaluric acid found in urine and which, according to Schutten, is a mixture of fatty acids. Daturic acid, a fatty acid from the oil of the seeds of *Datura stramonium.* Dialuric acid or tartronylurea which is of interest because of the light it has thrown on the structure of the ureides, a physiologically important class.

**Sugars:** of this class of polyalcohols-aldehydes or ketones but one occurs, viz., Crocose, a hexose from saffron, not yet identified chemically. Closely related to the sugars is dextrin, first prepared by Vanquelin in 1811.

Of **Glucosides** which are therapeutically if not physiologically more important, several come within the scope of this volume. Condurangine is the generic name for glucosides obtained from *Gonabolus condurango*: five according to Boquillon, according to Vulpius and Carrara but two. Coniferine is obtained from the cambial juice of conifers and upon hydrolysis and oxidation yields vanillin. Convallarine, isolated from lily of the valley in 1858 by Wolz, is according to Marmé a cardiac poison. Coronilline, prepared from different species of Coronilla and also known as cytisine, resembles digitalis in its physiological action. Cyclamine or arthanitine from the rhizome of *Cyclamen europaeum* L. Danaïne, a coloring matter isolated by Heckel and Schlagdenhaufen from *Danais fragrans.*

**Volatile Oils:** Those of *Icica heptophylla* (*conimère*) and of cubebs (*essence de cubèbe*), both containing sesquiterpenes, the latter also *cubébine*, $C_{10}H_{10}O_3$. That of curcuma containing *curcumol*, $C_{10}H_{14}O$, which is dignified with a prime.

**Resins**: Convolvuline, the resinous mixture from jalap tubers, is, as is well known, a powerful purgative.

**Alkaloids:** The first prime of the fourth volume is cocaïne, which receives no less than thirty-eight pages, the bibliography since 1890 covering two quarto pages. Codeine, discovered in opium by Robiquet in 1832 follows with five pages; colchicine, isolated by Pelletier and Caventou from *Colchicum autumnale* L. with four pages. Colloturine, discovered by Hesse in the bark of *Symplosus racemosa*, receives but mere mention. Concusconine is obtained from the bark of *Remigia purdicana*, conersine or wrightine from *Wrightia antidysenterica.* Under the prime conicine some recent investigations on derivatives of coniine find mention. Corydaline, extracted by Wackenroder from the root of *Corydalio bulbosa.* Cotarnine, an oxidation product of narcotine, and a substitute for ergotine. Cryptopine, another alkaloid from opium. Cupreine, discovered by Paul and Cownley, and which by methylation was converted into quinine by Grimaux and Arnaud. Curare, the South American arrow poison prepared from a species of *Strychnos* and also from other plants; also *curarisants*, a class of substances which, like

curare, stop the action of the motor nerves upon the muscles. Cusconine, another plant base from cinchona bark, found by Hesse. Cusparine from angostura bark. Cynapine, an alkaloid from *Aethusa cynapium.* Cynoglossine of somewhat questionable source. Cytisine from *Cytisus laburnum.* Delphinine, one of the alkaloids isolated from *Delphinium staphisagria* by Dragendorff and Marquis.

The physiological importance of this class of plant products is sufficiently well known and need not be emphasized. Even more important physiologically, if not as much therapeutically are the **Albuminoids,** of which the following occur. Cubilose, a neutral albuminous substance from the *nid d'oiseau*, an Indian vegetable. Conchioline is a substance related to keratine and therefore to the true albuminoid substances. Conglutine, also known as amandine because prepared also from bitter and sweet almonds, is prepared according to Ritthausen's process for the preparation for legumine, which it resembles in some respects. Not distantly related to the albuminoids is the ferment diastase, possibly an "Abbau" product of these physiologically important bodies. It itself is physiologically of considerable import as is shown by the fact that over twenty pages are accorded this prime, the bibliography on the subject covering almost two of the quarto pages.

**Bitter Principles:** Of this rather poorly defined group of plant substances colocynthine from *Cucumis colocynthis* receives rather brief notice, half of the short item being made up of bibliographic references. Cornine is the crystalline bitter principle from *Cornus florida.*

**Unclassified:** The first of this group is coccognine, $C_{20}H_{22}O_8$, a crystalline principle from *Daphne mezereum.* Under *Colloïdes* the difference between colloids and crystalloids is explained and their physiological significance referred to. Colloidine is a substance prepared by Wurtz from a cancer, about which but very little seems to be known. Columbine, which occurs with berberine in colombo root, is used as stomachic and astringent. Coriine is a hyde extract prepared by Reimer, soluble in alkalies and precipitated by acids that combines with tannin. Coriamystine is a toxic substance extracted by Ribau from *Coriaria mystifolia.* Corticine obtained by Braconnet from the aspen. Cosine or cousine, the active constituent of kousso. Cotoïne, prepared from Bolivian coto bark, and prescribed against diarrhea.

Pharmaceutical, though also chemical, are the articles on creoline, an antiseptic mixture; and creosote, a mixture of phenols, etc., varying according to source and method of preparation.

Physics is represented by but three primes., viz., *Cryoscopie*, *Crytomètrie* and *Dialyse*; zoology by but one, viz., *Crustacés*, receiving forty-four pages.

Physiology in a more restricted sense, although not represented by as many primes as chemistry, comes in for the bulk of space as will be shown by the following primes with the number of pages devoted to each given in parenthesis: *Coeur* (316), *Commotion* (4), *Consanguinité* (15), *Constipation* (4), *Contracture* (11), *Convulsivants* (9), *Coordination* (25), *Copulation* (5), *Cornée transparents* (15), *Crystallin* (7), *Croissance* (60), *Curarisants* (16), *Cyanose* (2), *Décapitation* (10), *Défécation* (9), *Défense* (22), *Déglutition* (33), *Dégoût* (6), *Délire* (9), *Dépresseur* [*Nerf*] (20), *Dermographisure* (1), *Diabéte* (46), *Diapédèse* (18), *Diaphragme* (6), *Diarée* (7), *Diastase* (21), *Digestion* (44).

**Biography.** Four physiologists receive honorable mention as it were: E. de Cyon, a Russian physiologist and university professor at St. Petersburg, with a bibliography of seventy-one articles. He is one of the contributors to this Dictionary. Charles Darwin, the well-known English scientist, with a brief sketch of his career and a list of his books. Reference is made to various biographies for detailed information. A. Dastre, another contributor, is Professor of Physiology in the Faculty of Science in Paris, the chair occupied by Claude Bernard from 1854 to 1868. His numerous publications are classified and brief abstracts of some are given. Finally Descartes (1596—1650) "le plus grand philosophe du XVIIe siècle," who also exercised considerable influence on the development of physiology. Several fac-simile illustrations are presented with a discussion of his work and methods.

Experts along various lines will, no doubt, be able to find other omissions and errors, a few of which have been pointed out. These, however, but slightiy impair the general value of this important work. It shows the one fault, not that of author or publisher, with all large and epoch-making works, viz., that we cannot have it all complete at once. It recommends itself and needs not the praise of the reviewer.

*E. K.*

# SUPPLEMENT.

## Scientific Organizations.

The **British, French and German Associations for the Advancement of Science** * have held their annual meetings during the month of September. In each of these countries and in most other European countries, as well as in America, there are migratory scientific congresses of the same general character. As these have grown up somewhat independently, they evidently meet a common need. Science cannot be advanced by a man working independently and in isolation. The printing press was essential to the beginnings of modern science, while at the same time it was usual for the scientific student to travel from place to place that he might learn and teach. Then in the seventeenth and eighteenth centuries, as the cultivation of science became more general, royal academies were founded. The Royal Society was established at London in 1660 under the patronage of Charles II., the Academy of Sciences at Paris in 1666 under Louis XIV., the Royal Academy at Berlin in 1700 under Frederick I., the Imperial Academy at St. Petersburg in 1724 under Peter the Great, and in other cities similar academies were founded under similar auspices. Then in the first half of the present century, as science continued to grow, the more democratic organizations for the advancement of science were established. The Society of German Scientific Men and Physicians was formed, chiefly through the efforts of Humboldt, in 1822; the Swiss Association in 1829, and the British Association in 1831. Our own Association was established in 1847, but was then the intergrowth of a society dating from 1840. These associations are significant of the spread of science among all the people. Science is no longer the concern of a few men under royal patronage, but the two great movements of the present century—the growth of democracy and the growth of science—have united for their common good.

While from the scientific point of view the present century has been notable for the development of national associations for the advancement of science, its latter decades have witnessed a growth of international scientific meetings which may be expected to become dominant in the twentieth century. There are at least one hundred congresses, having more or less reference to science, meeting at Paris during the present summer. Perhaps the most noteworthy of these, from the point of view of the organization of science, is the **International Association of Academies,** which was established last year at a conference held at Wiesbaden. In this Association eighteen of the great academies of the world, including our own National Academy of Sciences, have been united to promote the interests of science. Literature is also included—of the eighteen academies, twelve include in their scope both science and literature, four are devoted to science only and two to literature only. It is planned to have a general meeting every three years,

* From Pop. Sc. Monthly.

to which each academy will send as many delegates as it regards as desirable, though each academy will have but one vote. In the interval between the general meetings, the business of the Association is to be directed by a committee, on which each academy is represented. The object of the Association is to plan and promote scientific work of international interest which may be proposed by one of the constituent academies, and generally to promote scientific relations between different countries. The Royal Society has proposed the measurement, by international coöperation, of an extended arc of the meridian in the interior of Africa.

**Section Pharmacy and Pharmacognosy, V. d. N. u. A.** The following papers were read:

G. Arends—Berlin: Gereinigte Guttapercha und Balata.

E. Erdmann—Halle: Ueber den therapeutisch wirksamen Bestandtheil des Perubalsams und seine synthetische Herstellung; p. 517.

E. Dieterich—Helfenberg: Werthbestimmung des Senfsamens, Senfpapiers und Senföles; p. 517.

Fuchs—Bieberich: Dormiol.

A. Jolles—Wien. Volumetrische Methode zur quantitativen Bestimmung der Purinbasen im Harn.

—— Fersan; p. 514.

Katz—Leipzig. Die Alkaloide des Delphinium staphisagria; p. 517.

Partheil—Bonn: Aus der Stickstoffreihe.

Prof. Th. Paul—Tübingen: Physikalisch-chemische Untersuchungen über das Verhalten der Harnsäure und ihrer Salze in Lösungen.

—— Die Konstitution der Lösungen von Coffeinum Natrio-benzoicum und Theobrominum Natriosalicylicum und ähnlicher Präparate.

Schaer—Strassburg. Ueber Guajakblau und Aloïnroth; p. 516.

Schaerges—Basel: Neueste Arzneimittel.

ANNOUNCEMENTS RECEIVED:

New Jersey: Annual announcement of the New Jersey College of Pharmacy. Session of 1900—1901.

PROCEEDINGS RECEIVED:

Arkansas: Proceedings of the eighteenth annual meeting of the Arkansas Association of Pharmacists held at Little Rock, Arkansas, June 12—14, 1900. Brochure, pp. 40.

New Jersey: Proceedings of the thirtieth annual meeting of the New Jersey Pharmaceutical Association held in Asbury Park, N. J., Wednesday and Thursday May 23 and 24, 1900.

Virginia: Proceedings of the nineteenth annual meeting of the Virginia Pharmaceutical Association held at Ocean View, Va., July 17—19, 1900. Brochure, pp. 71.

Washington: Proceedings of the ninth and tenth annual meetings of the Washington State Pharmaceutical Association held at North Yakima, September 26, 27 and 28, 1898 and at New Whatcom, July 12, 13 and 14, 1899.

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## Bibliography.

In the letters written by Wöhler to Hermann v. Meyer between 1818 and 1824 and recently edited by Kahlbaum (see p. 526 of this number) the former makes use of an odd abbreviation for the word crystal, German Krystall, viz. *Xtall* (p. 66*), plural *Xtalle* (pp. 30, 60, 73) which,

* The numbers refer to the pages of the book referred to.

however, according to Kahlbaum (p. 30*), was sanctioned by the custom of those days. It was also used in compounding words, e. g. Tinkal-*xtal*† (p. 67). As verb we find *xtalisiren* (pp. 55, 67, 73)—the same form used as substantive *Xtalisiren* (p. 80), also *xtalisirt*—used figuratively as well (p. 64) and shortened to two letters, *xt* (p. 91). As adjective we find *xtalisirter* (p. 54), abbreviated still further to *xter* (p. 67); as adverb *xtalisirbar* (p. 80). Finally he uses *Xtallisation* (pp. 56, 73, 84).

The Lloyd Library has recently issued a Catalogue of Periodical Literature in the Lloyd Library which will be welcome indeed to all persons interested in pharmaceutical literature.

The Botanical Department includes Section 1: General periodical publications; Section 2: Publications of the U. S. Dept. of Agriculture; Section 3: Bulletin of agricultural stations; Section 4: Annual reports of agricultural experimental stations. The Pharmaceutical Department includes Section 1: General periodical publications; and Section 2: Proceedings of pharmaceutical associations.

CATALOGUES RECEIVED:

F. A. Brockhaus—Leipzig. Monthly list of new books. August and September 1900.

Lemcke & Buechner — Leipzig Monthly bulletin of world literature. May 1900.

Henry Frowde—New York. A select list of new books. 1900—1901.

MacMillan Co.—New York. Book reviews. September and October 1900.

† Wöhler's orthography is not always of the very best in these letters, most of which were written at the age of nineteen.

## Commercial.

**The Cultivation of Herbs in Surrey.***

The ordinary culinary herbs are also cultivated to a considerable extent for the purpose of preparing powdered flavoring herbs for winter use. These include parsley, spearmint, summer and winter savory (*Satureia hortensis* and *S. montana*), garden marjoram (*Origanum marjorana*), thyme, lemon thyme, tarragon (*Artemisia dracunculus*), and red and white sage.

The peppermint, pennyroyal, lavender, balm, savine, and tansy are not grown for distillation of oil, but for dried herbs only. The marshmallow is grown not only for the herbage, but for the fresh roots, for which there is a limited demand, and so far as I know Messrs. Potter and Clarke are the only cultivators of it for this purpose. The double camomile flowers are dried on the spot by dry heat on trays in a drying room, as the weather permits, but as they do not last long in good condition it is no easy matter to pick them at the right moment in dry weather and to dry them off quickly of good color, when there are large quantities to deal with, the dried flowers having usually to be subsequently sorted according to color. The foliage of the camomile is also dried as an herb, there being a fair demand for it as an ingredient in herb beer. The herbs when coming into flower are cut and tied into packets and dried in the shade in large sheds, hung on strings, and packed as closely as allows a thorough current of air to pass through in every direction. The rapidity of drying depends, of course,

* Continued from p. 488.

upon the weather to some extent, in fine weather taking about four or six days.

The largest demand at present is for pennyroyal, yarrow, hyssop, peppermint, feverfew, marshmallow, wormwood, mugwort and rue. For *Chenopodium olidum*, curiously enough, there is a demand for more than the firm is yet able to grow. The plant is somewhat unsatisfactory, as it will sow itself where it is not wanted, and communicates its fishy odor to everything it touches; temporarily, at all events. Savine herb is in less demand than formerly, but the demand for yarrow, which is a very popular diaphoretic for a cold, is so large, that although it grows wild almost everywhere, it is so much finer under cultivation that it pays to grow it. *Santolina chamæcyparissus* is chiefly exported to our colonies. The soil is sandy and gravelly, but is so well manured that it has quite a blackish color, and the plants evidently thrive well. The ground is level, and is ploughed as in a wheat-field, each herb having a separate ridge to itself right across the field.

The cultivation is under the charge of Mr. Wren, who takes great interest in the venture, and who kindly conducted me over the herb farm. At present it cannot be said to be profitable, the expenses of buildings for drying the herbs and of rent for land and labor at present only being paid for out of the produce, leaving practically no profit. But these are initial expenses necessary in every business, and if the higher price obtainable for carefully-dried, well-grown English herbs can be kept up, there seems a probability that in a few years the growing of herbs may be made a paying industry. Mr. Wren hopes in time to be able to grow such rare herbs as ground pine (*Ajuga chamœpitys*), and possibly some American plants, such as *Scutellaria lateriflora* and *Hamamelis virginica*. Ground pine is gradually being exterminated on the Kentish hills, and if some of the rarer herbs can be cultivated on a commercial scale, several of our less common British plants will be spared to rejoice the eyes of botanists. The continued use of such plants as yarrow, ground pine, germander, vervain, woodsage etc., generation after generation, seems to indicate that they might be worthy of chemical investigation. As yet we can hardly say that we know the principles to which the diuretic and cholagogue properties of dandelion and the tonic properties of camomile are due, although they are both B. P. articles.

PRICE LISTS RECEIVED:

Bausch & Lomb—Rochester. Price list of microscopes and accessories. Catalogue A. 1900.

Caesar & Loretz—Halle a. S. Preis-Verzeichniss. Special-Handlung für vegetabilische Drogen in ganzem und bearbeitetem Zustande. September 1900.

Druggists' Circular—New York. Price list. September 1900.

Fritzsche Brothers—New York. Wholesale price list, September 1900.

Zimmer & Co.—Frankfurt. Vereinigte Chininfabriken. Prices current, July 1900.

D. Appleton & Co.—New York. Preliminary autumn announcements for 1900.

# Pharmaceutical Review.

VOLUME 18. DECEMBER, 1900. NUMBER 12.

## Editorial.

Just as the clock of time was about to strike the last hour of the century, old age closed the eyes of one who like no other person now living could look back upon American pharmacy for four score years and who like few others had helped to shape it. Fortunately American pharmacy is no loser in the death of Dr. Edward R. Squibb, for a kind Providence had permitted him to reach an age when further severe work was out of the question. His numerous pharmaceutical friends, however, mourn his loss, for his company was still goodly company and his conversation a pleasure to those who were so fortunate as occasionally to meet him. To all who knew of him, his memory will continue to live. The name of E. R. Squibb is engraven deeply in American pharmacy and the wear and tear of time will not efface it as long as the history of our calling is written.

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Possibly the most far-reaching act of the Convention for the Revision of the United States Pharmacopœia held at Washington last May was to authorize its corporation. The incorporation has since been effected legally and the Council and Revision Committee elected last May by the Convention have been reappointed by the incorporators in accordance with the requirements of the law. It would be useless to speculate at present as to the outcome of this change. It is reasonable, however, to suppose that this change is of sufficient import to interest keenly all those who are interested in the United

States Pharmacopœia and its revision. The document filed at Washington is bound to become one of the most important of a pharmaceutical nature. The Review, therefore, has taken pains to offer it to its readers in facsimile reproduction. We are indebted to Mr. Wm. S. Thompson, one of the resident incorporators, and President of the new corporation, for his kind assistance in having the plates made from the original document. We regret that we are not in position, as these lines go to press, to offer our readers an account of the actions of the new corporation as we had hoped to. This will, no doubt, be forthcoming in the near future.

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The principal feature of the inaugural exercises of the School of Pharmacy of the Pharmaceutical Society, London, October 1, was the address by Professor Ramsay, known through his researches in conjunction with Lord Rayleigh on argon. In this address he quotes a statement made by Professor v. Bayer of Munich who is known for his accomplished synthesis of indigo: "I don't care how little or how much a man knows; I wish to find out if he has learned to think."

The same sentiment was recently expressed by Professor W. H. Perkin, Jr., in his address as President of the Chemistry Section of the British Association for the Advancement of Science on: "The modern system of teaching practical inorganic chemistry and its development." After criticising the method largely in use of making the student a machine to turn out analyses of mixtures according to schedule he quotes Sir Michael Foster who said in his presidential address last year: "The learner ..... may be brought abruptly to a truth in a finished form ..... or he may be slowly guided along the path by which the truth was reached by him who first laid hold of it. It is by this latter way of learning the truth, and by this alone, that the learner may hope to catch something at least of the spirit of the scientific enquirer."

Professor Perkin endorses "this principle of historical development" and emphasises that it is the thinker, the investigator, who is needed rather than the student crammed with chemical facts."

Nearer home, this same need has been urged upon us by President Thwing of Western Reserve in his book on "College administration." We quote the following sentences:

"Harvard College, like every American college, is graduating men of richer attainments than the college of the earlier time. The graduate

approaches nearer the type of the gentleman of culture, knowledge is more affluent; the appreciation of the best more adequate and more common." But on the other hand, "The college is making scholars rather than thinkers. It is good to make a scholar; it is better to make a thinker. American life needs scholars much; American life needs thinkers more." And on another page: "The American community is, on the whole, honest, and the American community is, on the whole, intelligent, but the American community cannot think." To secure from the college its share in the work of amelioration, "Two things may at least be said: first, far greater care should be exercised in the choice of teachers in order to secure those who are able to train thinkers; and, secondly, proper urging should be given to men, on the part of advisors and counsellors, to take severer and more thought-provoking courses."

These opinions of men who have been both teachers and examiners should be heeded not only by our college professors, but by members of state boards as well. At a recent examination in Wisconsin, the questions were framed by a member of the Board who wanted to test the thinking faculties of the candidates. The latter who had prepared by cramming quiz compends were unequal to the task and the result was numerically a miserable failure. The experiment itself, however, proved a success and, we hope, will be repeated. For what is more important behind the prescription counter than the capacity to think? Quiz compend knowledge if of any immediate value will soon take flight, but the capacity to think will stay.

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On the twentieth of October the German Chemical Society dedicated the Hofmann House to the service of chemistry. The German government considered the event of sufficient importance to send some of its highest officials, and also availed itself of the occasion to distribute honors among some of the principal representatives of German chemical science and industry. The event once more shows to the world the strength of German chemistry brought about, in no small degree, by the harmonious action of the representatives of science and industry. The centralization of energy where a splitting of forces means waste has become the new policy of this association. The dedication of the Hofmann House gives outward expression, as it were, to this new policy.

The German Chemical Society was founded in 1868 under the auspices of A. W. v. Hofmann, who was its first president and who was foremost in its counsels until his death in 1893. The objects of the society are to foster the development of chemistry in various ways. At the end of the first year the society had a membership of 257, to-day it has on its rolls more than 3100 names, of which more than 1300 are not German. The United States comes first with 283 members, England next with 257, then Austria with 181, Switzerland with 155, Russia with 119, Holland 90, France 82, Asia 17, American countries other than the United States with 14, Australia with 5 and Africa with one.

Although the association holds frequent meetings, these are not the factor that gives it such remarkable strength. The meetings are held at Berlin and are attended by but an exceedingly small fraction of the members. The proceedings which are issued bi-monthly, except during the summer months, however, are by its members considered an adequate equivalent of their annual dues. During the year 1899, the proceedings contained 3800 pages of original matter and an index of 300 pages. When bound, the 4100 pages constitute three very respectable volumes. The papers published in these proceedings cover the entire realm of chemistry, but pertain principally to organic chemistry.

Formerly the "Berichte," as these proceedings are known the world over, also contained abstracts, but January 1, 1897, these were dropped. Since this date the society has taken charge of the Chemisches Centralblatt which publishes nothing but abstracts. This journal appears weekly throughout the year and supplies its subscribers with abstracts of practically all articles of chemical interest published in any part of the world. The number of papers abstracted during 1899 was 6027. These constitute two heavy volumes. It has about 2000 subscribers at present.

The Handbuch der organischen Chemie, which was begun by Professor F. Beilstein of St. Petersburg and which he has twice revised, has also been adopted by the society. The work had outgrown the capacity of a single man. A supplement is now appearing in four parts, one part to appear annually, under the auspices of the German Chemical Society. This society, therefore, now publishes a goodly proportion of the world's original chemical contributions, it publishes abstracts on almost all chemical contributions, and a catalogue, as

it were, of everything ever contributed to organic chemistry. There is possibly no scientific organization anywhere that publishes as extensively and which by proper centralization of efforts with adequate cooperation accomplishes so much for the science it represents and for its members.

All of these undertakings, and others as well, have now found a permanent place in the Hofmann House, the home of the society, named in honor of its founder. Besides the editorial offices, the building contains a library, a lecture room, a research laboratory, and rooms for other chemical societies and the janitor.

The library subscribes to about 100 chemical journals. It further comprises 5000 dissertations and more than 1000 larger monographs. The lecture room contains 254 convenient seats. The two upper stories are rented to the Berufsgenossenschaft für die chemische Industrie Deutschlands, and to the Verein zur Wahrung der Interessen der chemischen Industrie Deutschlands.

The society has also participated in public affairs. Thus the Liebig monuments in Munich and Giessen, and the Wöhler monument in Goettingen were erected with the money collected by the society. American chemists will remember the striking exhibit at the World's Fair in 1893, made by this society, representing the chemical research of the Germans. At the Paris exhibition the society exhibited a collection of 222 specimens representing the important discoveries affecting chemical industry made by German chemists during the past century.

Though but thirty-two years old, this society can look back upon a remarkable development. If in the future it will undertake to do for the other branches of chemistry what it is doing for organic chemistry at present, it will unquestionably become the central bureau of chemistry for the world. To attempt to duplicate some of its work would be as unwise as economically wasteful, but we shall do well to look into the secret of its progress. The American Pharmaceutical Association is looking about for ways and means to strengthen an organization which in some respects is not as vigorous as seems desirable to those most interested in its welfare. Here is an object lesson·

# CERTIFICATE OF INCORPORATION

This is to certify that we, whose names are hereunto subscribed, citizens of the United States of full age and a majority citizens of the District of Columbia, do associate ourselves together pursuant to the provisions of sections 545-552 inclusive of the Revised Statutes of the United States relating to the District of Columbia and of the act of Congress to amend the same approved the 23rd day of April, 1884, under the corporate name of THE UNITED STATES PHARMACOPOEIAL CONVENTION.

This Association is organized for a period of nine hundred and ninety-nine years.

The particular objects and business of this Association ~~is~~ are the encouragement and promotion of the science and art of medicine and pharmacy by selecting by research and experiment and other proper methods and by naming such materials as may be properly used as medicines and drugs with formulas for their preparation; by establishing one uniform standard and guide for the use of those engaged in the practice of medicine and pharmacy in the United States whereby the identity, strength and purity of all such medicines and drugs may be accurately determined, and for other like and similar purposes; (V) and by printing and distributing at suitable intervals, such formulas and the results of such and similar selections, names and determinations among the members of this Association, pharmacists, and physicians generally in the United States and others interested in pharmacy and medicine.

The management and control of the affairs, funds and property of this Association for the first year of its

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existence shall be vested in a Board of Trustees consisting of the seven following persons:

Albert E. Ebert,

Samuel A. D. Sheppard,

William S. Thompson,

Charles E. Dohme,

George W. Sloan,

Horatio C. Wood,

Charles Rice,

In testimony whereof we have hereunto set our hands and affixed our seals this Seventh — day of July A.D. 1900

William S. Thompson (Seal)

George Le. Magruder (Seal)

John T. Winter (Seal)

Thomas C. Smyth (Seal)

(Seal)

J. M. Cornwell (Seal)

Murray Galt Motter (Seal)

Witness:

Dudley D. Harris

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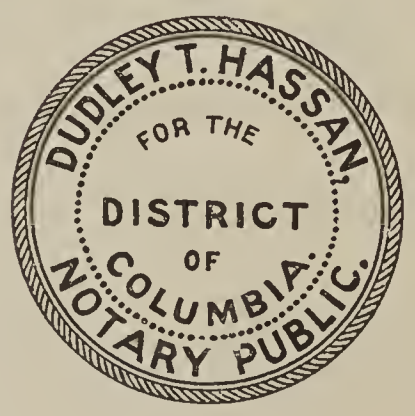
City of Washington )
) to wit:
District of Columbia )

I, Dudley T. Hassan, ----- a notary public in and for the District aforesaid do hereby certify that William S. Thompson, G. Lloyd Magruder, John T. Winter, Thomas C. Smith, William M. Mew, and Frank M. Criswell, parties to the articles of incorporation hereto annexed, personally appeared before me in said District, the said parties being all personally well known to me as the persons who executed the said articles of incorporation, and acknowledged the same to be their act and deed.

Given under my hand and official seal this Seventh day of July A.D. 1900.

Dudley T. Hassan

Notary Public, D. C.



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County of Garrett
State of Maryland ss:

I, Lewis A Rudisill a notary public in and for the county and state aforesaid do hereby certify that Murray G. Motter, party to the articles of incorporation hereto annexed, personally appeared before me in said County and State, the said Murray G. Motter being personally well known to me as the person who executed the said articles of incorporation, and acknowledged the same to be his act and deed.

Given under my hand and official seal this ninth day of July 1900

Lewis A Rudisill
Notary Public

LEWIS A. RUDISILL, NOTARY PUBLIC. MOUNTAIN LAKE PARK, MD.

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**STATE OF MARYLAND, Garrett County, to-wit:**

*I, E. Z. TOWER, Clerk of the Circuit Court for Garrett county, being a Court of Law and Record, do hereby certify that* Lewis A. Rudisill *Esquire, before whom the aforegoing ~~affidavit and~~ acknowledgment ~~was~~ made, and who has hereto subscribed his name, was at the time of so doing a NOTARY PUBLIC in and for the county and State aforesaid, duly appointed, commissioned and qualified, and authorized by law to administer oaths and take acknowledgments.*

*In testimony whereof I hereunto set my hand and affix the seal of the said Circuit Court for said Garrett county, this* 9th *day of* July *A. D.* 1900

E. Z. Tower, Clerk.

CIRCUIT COURT, GARRET COUNTY, MD.

# History of the Art of Distillation and of Distilling Apparatus.*

Adapted and supplemented from "The Volatile Oils," by *Oswald Schreiner.*

From the fourteenth century on the practice of making distilled liquors increased very considerably. The perfection of the apparatus for the preparation of distilled liquors, also distilled oils, which up to that time had received but little attention, seems, however, to have progressed much more slowly and with greater difficulty than with the apparatus for the distillation of alcoholic liquids. This retardation in the development of the technique of distillation is in great part due to the erroneous ideas of circulation held at the time.

In comparison with the ready volatility of the alcohol, water was considered as that product of distillation most closely related to it, whereas the oil was regarded as the "obese and fatty substance that had to be driven over with a stronger and more violent heat." This had led to the firmly established belief that in the process of purification, the volatile and subtle part must penetrate and exhaust the

Figs. 23 and 24. Pelican and twin circulatoria.

material as much as possible. As a result all sorts of queer apparatus and sources of heat were invented to effect this *circulation*, as it was called. They all resulted in a prolonged digestion and an unintentional loss of the alcohol ofttimes formed by fermentation, and of the aroma.

Circulation was therefore considered not only as the essence of distillation but also as an important preparatory part of it. It was believed that the plant and animal material finally to be distilled was thereby prepared for the refinement and purification of the

* Continued from p. 501.

"geistige Wesen" contained in them and for their better and easier separation and purification. A large variety of vessels, usually constructed after some symbolic prototype, was used for this purpose. Some of these are shown in figures 23, 24 and 25. The simple *circulatoria* were ordinary glass flasks, retorts with the tubes bent

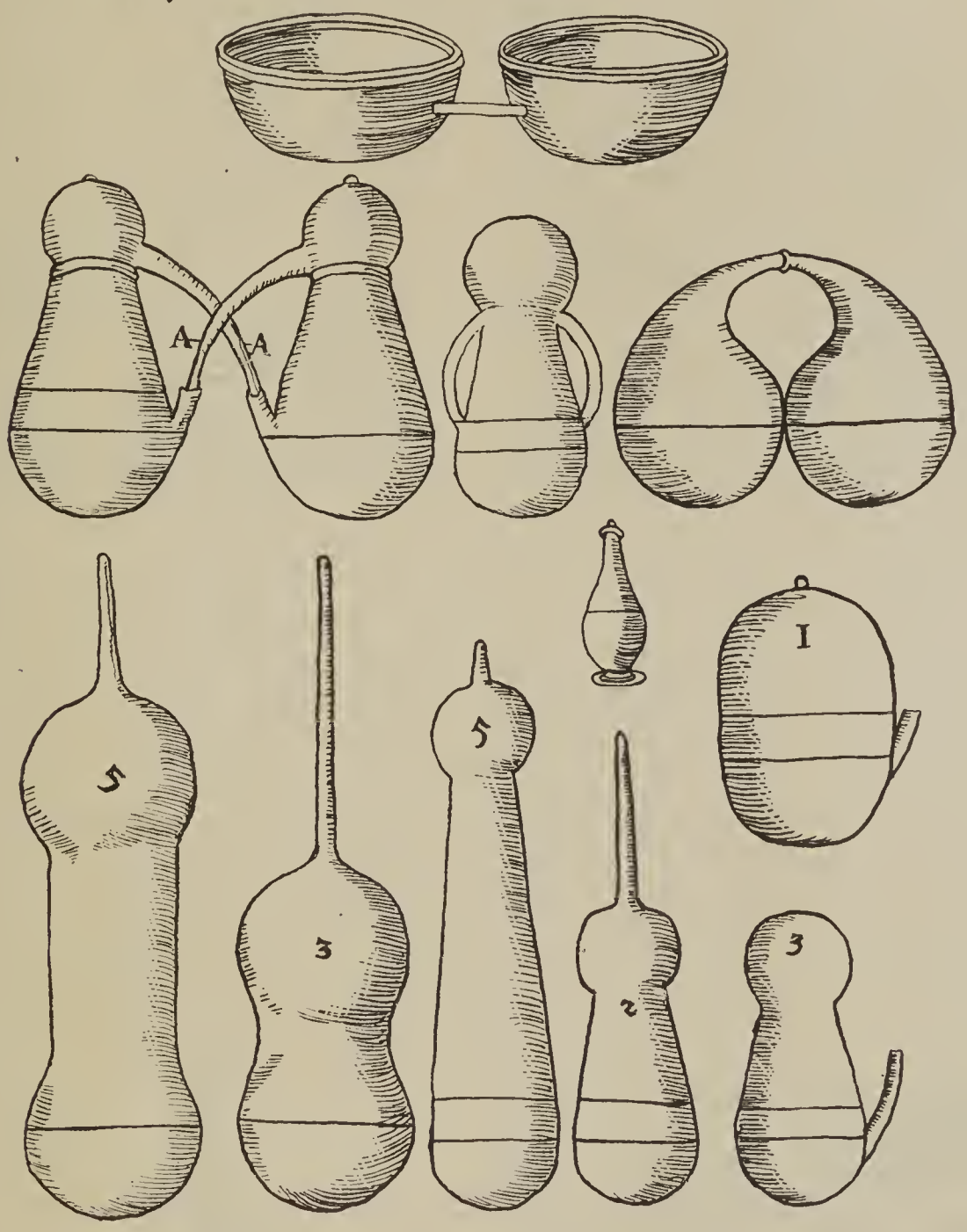


Fig. 25. Circulation and digestion vessels.

in a variety of ways, also so-called urine glasses used by physicians for diagnosis.

The operations in the pelican (figs. 23 and 25) and double or twin circulatoria (figs. 24 and 25), provided with reflux tubes, were considered as the most perfect kinds of circulation, especially for refining the "spirits." Many of the vessels could be sealed by fusion

of the long glass neck. A special furnace for this purpose is described in some of the books. Another favorite circulatoria was the double retort shown on the right in fig. 25. That this process of circulation did not consist in distilling from one retort into the other or from one vessel of the twin circulatoria to the other is explicitly stated. for the waterbath shown at the top of fig. 25 consisting of two parts connected by a tube, is directed to be used so as to prevent the inequal heating of the two parts of the apparatus. The double retort was also used for *destillatio per filtrum*. This, however, was not a process of distillation proper as we understand it to-day, but rather one of filtration. As already mentioned, the term distillation in the early distilling books included all processes connected therewith, the preparation of the material, fermentation, digestion, circulation, filtration, etc. Filtration through paper had not yet come into use. Turbid liquids were cleared by straining through cloth or they were "distilled *per filtrum*." For this purpose the liquid was put into a pan standing somewhat higher than a second glass. These two vessels were then connected by means of a strip of woolen cloth. The liquid rose by capillary action and ran down into the lower glass. For volatile liquids the double retort mentioned above was used. The liquid was placed in one retort and this was tilted so as to stand higher than the other. A strip of cloth made the connection through the beak of both retorts, and the liquid was thus filtered out of contact with the air.

Still more peculiar than the form of the circulatoria was the source of the heat used for the purpose of circulation, usually accompanied by fermentation, and even decomposition processes.

Fig. 26. *Destillatio per balneum Mariae.*

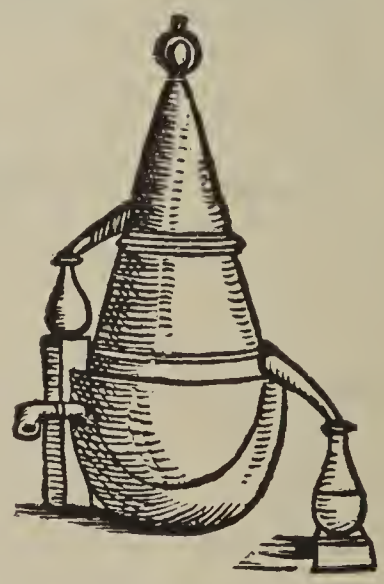

Fig. 27. *Destillatio per balneum cinerem.*

Not only was the water bath (*balneum Mariae*) (fig. 26) and the ash-bath (*balneum cinerem*) (fig. 27) employed, but also the sun-bath (*destillatio solis*) (fig. 28). In order to utilize the heat of the sun as much as possible. a concave mirror was used and the vessel to be heated was placed between this mirror and the sun, so that both the direct and the reflected rays fell on the vessel.

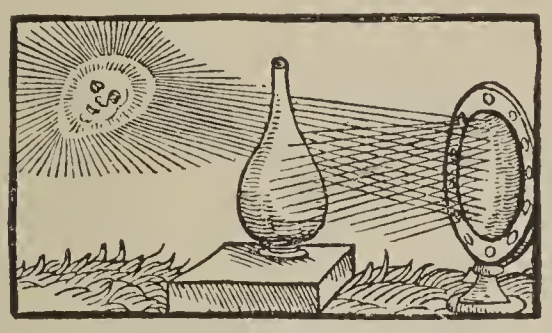

Fig. 28. *Destillatio solis.*

Fig. 29. *Destillatio per ventrum equinum.*

The circulation vessels were also immersed in fermenting dough, and heated with this in an oven (*destillatio panis*); or they were imbedded in pits with layers of unslaked lime and horse manure (*destillatio per ventrem equinum*) (fig. 29). By moistening with warm water the lime was slaked and fermentation of the horse manure took place, thus giving rise to a continued elevated temperature. The mixture had to be renewed every two or three days.

Another form of heat employed was that known as "artificial heat," to distinguish it from the "living heat" of direct fire. This artificial heat was supposed to be "a direct imitation of the action of nature, which heats water in the interior of the earth, producing the invigorating natural baths." The directions to prepare this artificial heat are as follows: "Unslaked lime, which has just been removed from the kiln and is still warm, one part, sulphur, a half part, saltpetre, a fourth part, fine pure alum, an eighth part. Reduce each substance separately to a fine powder, then rapidly mix them and put them into a copper or brass sphere, which has been so prepared that neither water nor air can get in." This sphere, which had an opening for filling, was then hermetically sealed and put into a tub or other suitable vessel filled with warm water. The heat liberated by the sphere was said to keep a large bath of water hot for a long time. In figure 30 is shown such a bath with six

distilling vessels. Figure 31, which is a horizontal diagrammatic view of the same apparatus, shows the arrangement of the distilling vessels about the central heating sphere.

The treatises on distillation published during the sixteenth century reveal by both text and illustration that about that time more attention was again given to the construction of furnaces and implements used for the purpose of distillation.

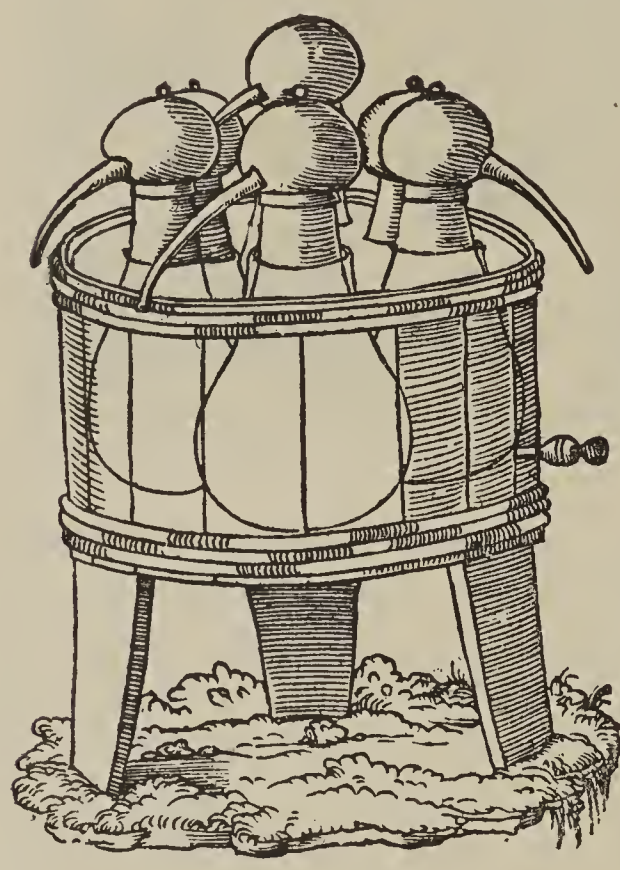

Fig. 30. Waterbath heated by "artificial heat," with six distilling vessels.

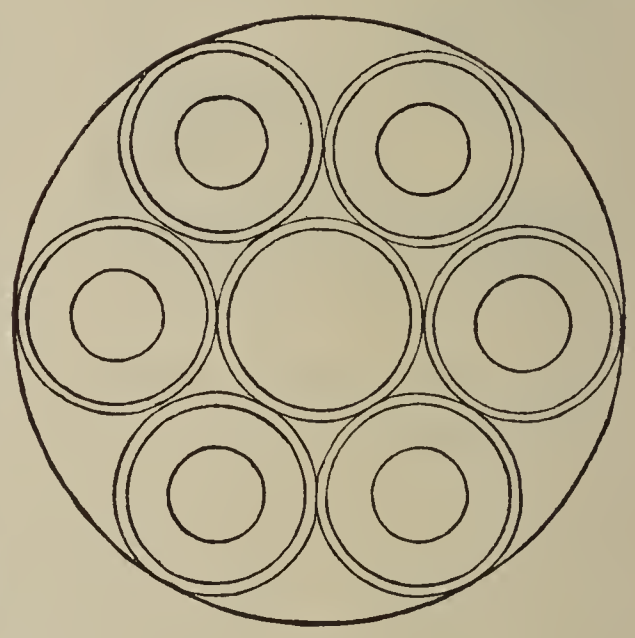

Fig. 31. Waterbath heated by "artificial heat," showing the arrangement of the stills and heating sphere. The sphere containing the chemicals is in the center of the tub.

These furnaces were usually constructed of bricks or glazed tile, often only loosely put together. At the bottom was a door for supplying the fuel and removing the ashes, and two small and a larger opening for the supply of air. At the top of the furnace were two short tubes for the exit of the smoke. When distilling from a metallic distilling kettle, the latter was placed directly above the fire, but when glass, earthenware, or lead vessels were used, the distillation was conducted "*per cinerem*" or "*per arenam.*" For this purpose the furnace was covered with an iron or stone plate, this then covered with three to four inches of ashes or sand and any one of the distilling vessels shown in fig. 11 set into the bath. Often the distilling vessel was also mortared into the furnace as is shown in fig. 32. For distillation from the waterbath "*per balneum Mariae,*"

the simple furnace was changed to a so-called "Kapellen"-furnace, which had a copper kettle mortared on the top of the furnace instead of the plate of the sand bath. This kettle was filled with water, and the distilling vessel set into it. To prevent the floating and falling over of the vessels, the latter were loaded with lead rings put around the body of the cucurbita.

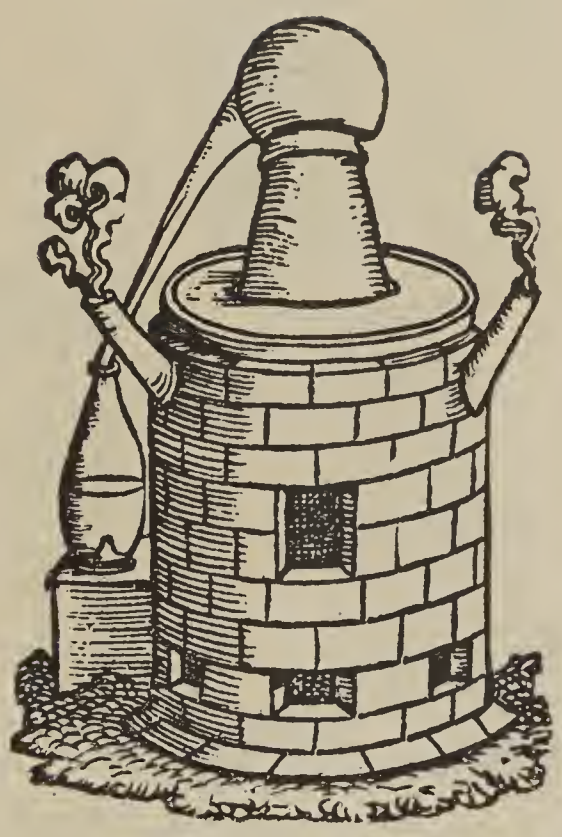

Fig. 32. Distilling furnace with single still.

In order to use one and the same fire for several distillations, furnaces were constructed which contained above or around a common fireplace, numerous stills. Figure 33 shows two stills, the one with only a single vessel, the other with three vessels above a common fireplace. The socalled "faule Heinz" or *Athanor* (from ἀθάνατος, imperishable) called by Ulstad *furnus Acediae* (fig. 34) was much in favor and was used to a great extent for the distillation of waters

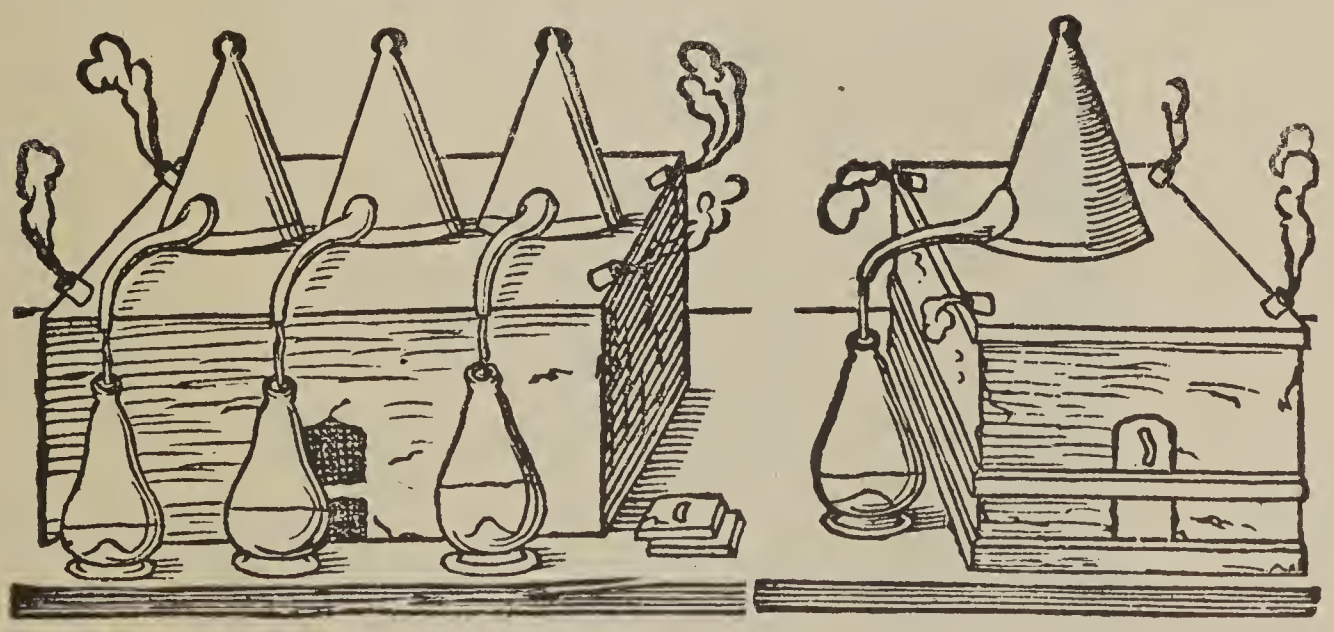

Fig. 33. Distilling furnaces with one and with three stills over a single fireplace

and oils. Above a common fireplace were placed three or more distilling retorts. The fireplace ended in a central iron, copper or earthenware pipe the opening of which could be closed by a cover. This pipe contained the fuel, and was self-feeding, much as our self-

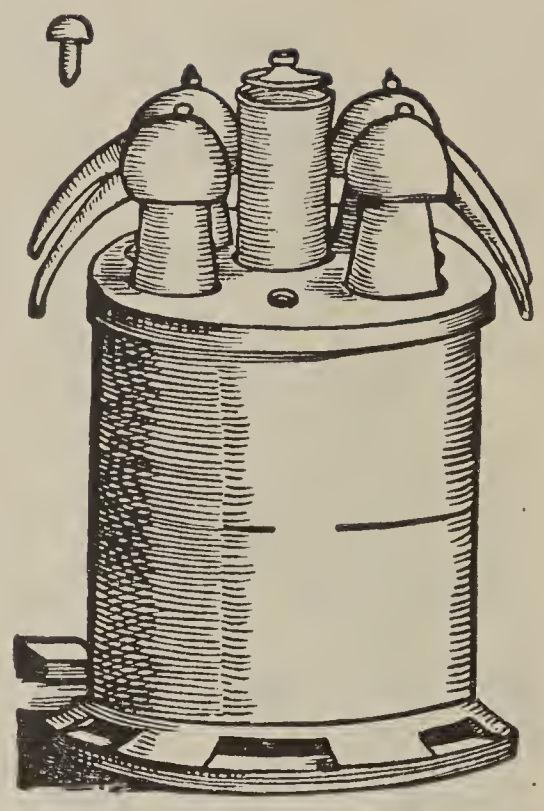

Fig. 34. "Faule Heinz" or *Athanor*, the most favored distilling furnace of the sixteenth century.

feeding stoves at the present time. By means of slides at the sides of the fireplace the heat could be conducted under any one of the stills or retorts as desired and the distillation was thus regulated.

For the distillation of large quantities in a large number of single retorts or stills, larger cupil furnaces after the manner of the so-called "galley furnaces" appear also to have been in use. The illustrations and descriptions of these in the treatises on distillation of the sixteenth century represent no doubt more the possibility than the realization of perfection. The illustrations of these furnaces were transferred from one distilling book to another, but probably have not been generally used in practice. Among others they are thoroughly described in the text and reproduced in illustration in the works of Matthiolus and of Loniçer previously

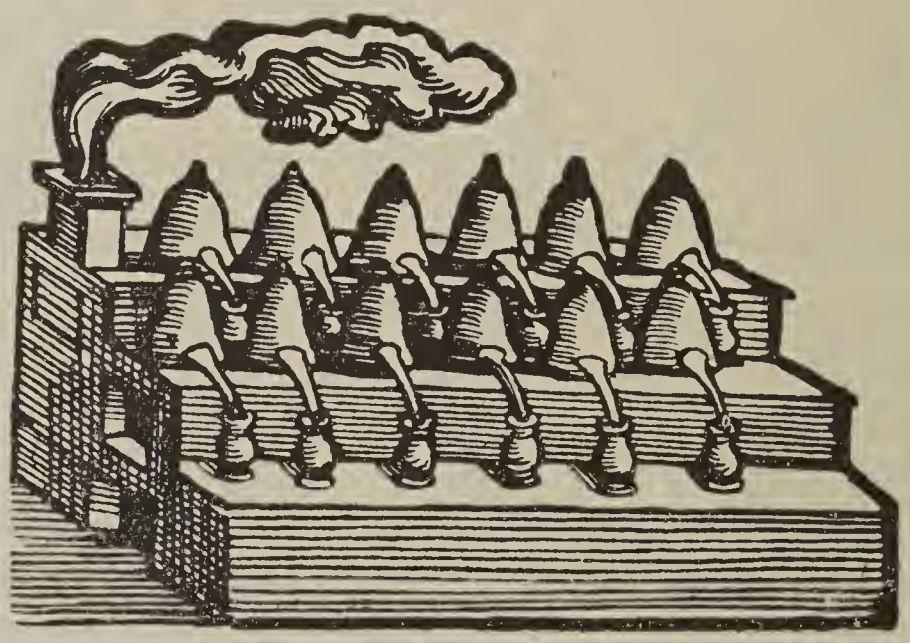

Fig. 35. Galley distilling furnace of the sixteenth century.

mentioned. They are built either in the shape of a terrace (fig. 35) or of a bee hive (fig. 36). The latter furnace is reported by Matthiolus to have been extensively used in the neighborhoods of Venice and Naples.

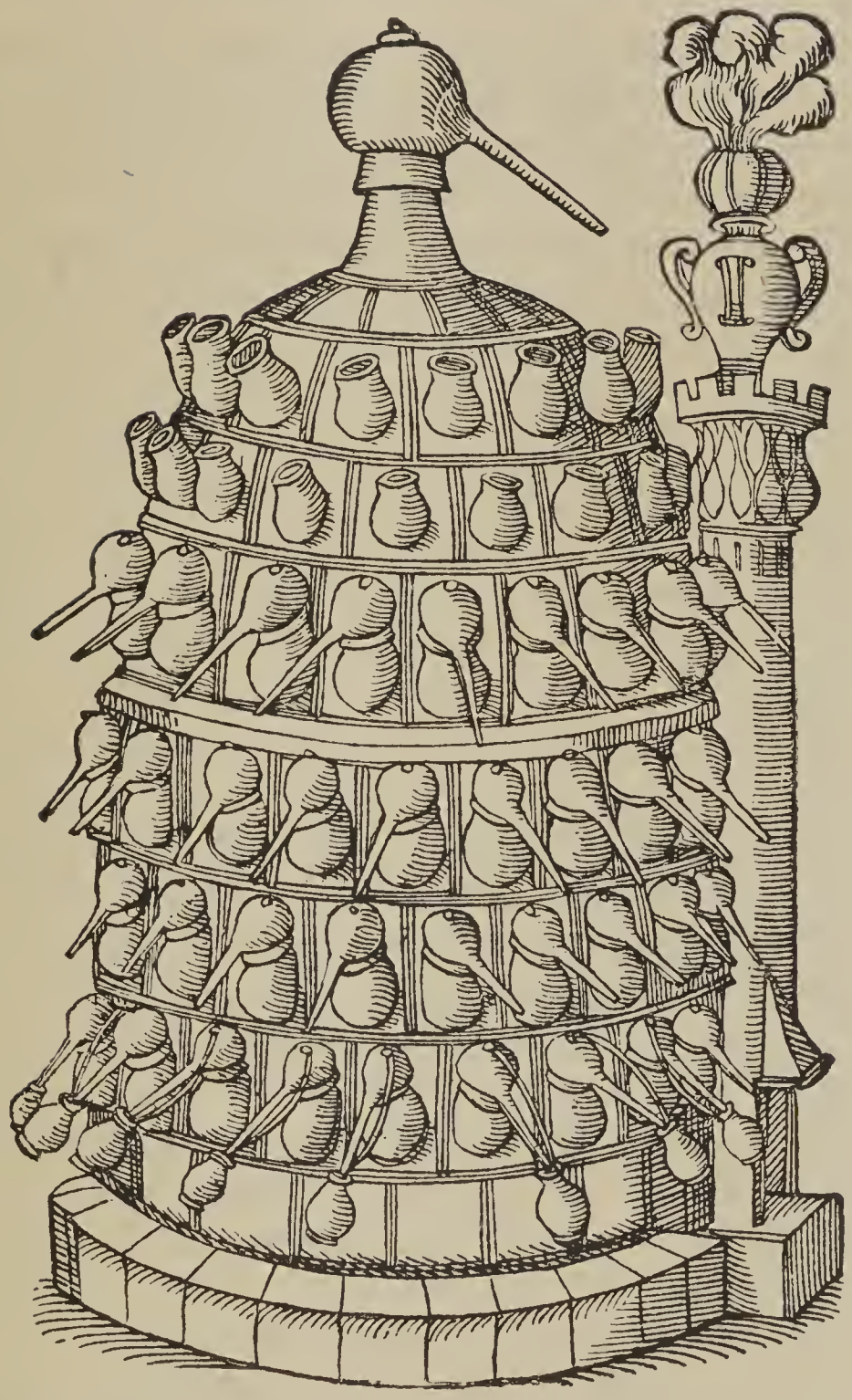

Fig. 36. Bee hive distilling furnace of the sixteenth century.

(To be continued.)

# An Historical Review of the Work Done on the Flora of the Territory Now Included within the Limits of Wisconsin.

By *L. S. Cheney.*

So far as the writer is informed no attempt has ever been made to bring together in a single account the results obtained by the various workers on our flora. From time to time since the middle

of the seventeenth century, explorers, missionaries, travellers, botanists and other scientists have made notes more or less extensive upon the vegetation of the territory now included within the limits of our state. From the historical standpoint alone it seems desirable that the gist of these scattered notes and papers be brought together in a connected account, while from the point of view of him who would engage in further investigation upon the flora of the region under consideration, such an account would doubtless be of great value. With these thoughts in mind, the writer has attempted to bring together in this paper the chief items of information contained in the various published notes and papers referring to Wisconsin's flora.

In the preparation of this account the information collected under the direction of the writer by Miss May Inez Randall for a thesis has been freely used.

The first references to our flora obtainable are those made by French explorers, missionaries and travellers, who early found their way into our forests and prairies in quest of new territory for their flag, the salvation of the souls of the savages, or new fields of adventure. While these people were busy with their special missions, they sometimes found opportunity to give attention for the moment to the country—its soil, topography, vegetation, etc.—but from the necessities of the case they could give but little time to matters of purely scientific value, and as a result the observations made by them upon the flora are all of a very fragmentary nature, dealing for the most part with such plants only as might be made to serve as material for food, medicine, clothing or shelter; or with such as made up the pronounced features in the landscape.

Our narrative properly begins with the observations made by John Nicolet.[1] In 1634 this man was sent by Champlain "to the Winnebagoes, for the purpose, principally, of solving the problem of a near route to China." He came by way of the great lakes and Green Bay. In his notes he refers to a single Wisconsin plant, *Zizania aquatica*, or wild rice, noting that it furnished the principal food material for the Indians in the neighborhood of Green Bay. Twenty-six years later, in October 1660, the Jesuit missionary René Menard[2] arrived in the Outaouak country in central Wisconsin. In his report to his superiors, he mentions "Tripe de Roche, a kind of

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[1] Discovery of The Northwest in 1634 by John Nicolet.—C. W. Butterfield, 1881.
[2] Jesuit Relations 1663—1664. Vol. 48, p. 257 et seq.

moss found on the rocks, which mixed with water served many times to keep the company from starving." The bark of the birch, linden and oak; acorns, raspberries and wild rice are likewise mentioned as being used for food. Speaking of the wild rice, he says: "It is a plant growing in marshy places to a height of four feet. When the grain is partly matured, the Indians tie it together in bundles, thus making a path for their boats, and when ripe, they strip off the fruit and thrash off the hull. The kernel is said to bear a close resemblance to our wild oats and makes a very nutritious food."

After the lapse of ten years, fathers Allouez and Dablon[3] made a journey up the Fox river to Lake Winnebago, and in their report they speak of the beautiful prairies, the oak openings, the "elms and other forest trees." They note also, "that the wild rice grows in abundance along the banks of the Fox river." The following year, 1671, Claude Dablon[4] observes in his report that "the surrounding country is very fertile where it is not covered with dense forests." He also spoke of the grapes, plums and apples (crab apples) growing on the prairies and gives a short description of a plant, which is doubtless *Podophyllum peltatum*. Of it, he says: "It is a kind of lime, resembling that of France, has no bitter taste, and the plant bearing it resembles a fern." In 1673 father Marquette and the explorer Joliet[5] made their journey across our territory by way of Green Bay and the Fox and Wisconsin rivers. In the account of this journey, reference is made to wild rice growing along the Fox river. An interesting plant[6] is likewise noted as "having the virtue of counteracting snake-bites." It is very hot and has the taste of powder when crushed between the teeth. It produces several stalks about one foot long, with pretty long leaves and a white flower, much like the Gillyflower. When they reached the Wisconsin river, near where Portage now stands, they were struck by the fertility of the soil and note the occurrence of plums and grapes, and the growing of corn by the Indians. Journeying down the lower course of the Wisconsin, they are impressed by the forests and mention specifically oak, walnut and basswood trees, also "one of another variety, whose branches are armed with long thorns," referring without doubt to the honey locust (*Gleditschia triacanthos*). Father Louis André,[7]

[3] Jesuit Relations 1670—1671. Vol. 55, p. 191 et seq.
[4] Jesuit Relations 1671—1672. Vol. 56, p. 123.
[5] Discovery and Exploration of the Mississippi. John G. Shea, 1853, pp. 9 & 12.
[6] The identity of this plant has not as yet been determined.
[7] Jesuit Relations 1671—1672. Vol. 56, p. 131.

the successor of father Marquette, disposes of the vegetation of the country about him with the bare mention of the cedars and firs around Green Bay, and the acorns given him by the Indians. In 1679—1680 father Louis Hennepin,[8] a Franciscan monk, made occasional notes concerning the vegetation along his route of travel from the lower great lake region to the Mississippi river and along the upper course of this stream. Referring to the Green Bay country, he says: "Our men found some hawthorn berries and other wild fruit." Of the islands in the Mississippi river along Wisconsin territory is the statement: "The trees and vines wherewith those islands are covered are so thick that one can hardly land." A period of fifty years now intervenes with no references to Wisconsin's flora. At the end of that period, in 1728, father Guignas[9] traverses Wisconsin by way of the Fox and Wisconsin rivers on his way from Montreal to the "Illinois country." He speaks of the Fox river as follows: "It is only a miserable little channel with hills on each side, full of rushes and wild rice." Of the Wisconsin he says: "It has either steep bare mountains or low plains with sandy bases."

The few chance references to Wisconsin plants chronicled in the preceding pages constitute the contribution to a knowledge of our flora, made by French missionaries and explorers. That these references should be so few and the descriptions of plants so scant will doubtless surprise most readers. It should be remembered, however, that at least two very potent factors operated to produce this result. First it must not be forgotten that the science of botany was only fairly well established in the latter part of the seventeenth century or about Hennepin's time and that consequently, although monks were among the favored ones in matters of learning, most of those who found their way to the interior of what was then a great wilderness, knew little or nothing of the science of botany and were interested in plants only in so far as they could supply some physical want of man or as they made up the striking features in the landscape. In the second place the preoccupation of these men in their special errands, the hundreds of miles of waterway which must be traversed in the frail bark canoe loaded to the last possible pound

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[8] A New Discovery of a Vast Country in America etc. Louis Hennepin, London, 1698, pp. 97, 99, 180 and 257.

[9] Early Voyages up and down the Mississippi by Cavelier, St. Cosme, Le Sueur, Gravier and Guignas. Albany. 1861. p. 167.

with absolute necessities for the special mission of priest or explorer, and the rigorous conditions of life inevitable in so wild a country all operated against systematic observation or collecting.

The first work of a purely scientific nature upon the flora of this state, of which we have any record, was done by an English naturalist, Mr. Thomas Nuttall.[10] In the year 1813 this gentleman travelled up the great lakes, across Wisconsin territory by way of the Fox and Wisconsin rivers and thence down the Mississippi river. In his "Genera of North American Plants" he makes frequent reference to localities within the state. Twenty-one species of flowering plants are here either definitely referred to Wisconsin localities or assigned to the state in a general distribution. While according to a pencil note made by Increase A. Lapham in a copy of the Genera of North American Plants, which formerly belonged to him, thirteen new species were described by Nuttall from material found within the state.[11] Nuttall's observations and descriptions are of plants seen by him along Lake Michigan, the two rivers mentioned above and the inland region in the southeastern corner of the state. Seven years after Nuttall's journey, in the summer of 1820, Gov. Cass of Michigan Territory conducted an exploring expedition along the great lakes, the upper course of the Mississippi river, and returning, across Wisconsin by way of the Wisconsin and Fox rivers. Prof. D. B. Douglass of West Point Military Academy accompanied the expedition in the capacity of naturalist, and though not a botanist, he undertook to make collections of plants found along the route of the expedition. Specimens of a hundred and ten forms were preserved and forwarded to Dr. John Torrey of New York, who identified and named them, and published the list with brief notes.[12] Of these, thirteen flowering plants are noted for localities in the state, and of the new forms described, two, *Panicum longisetum* Torr. and *Andromeda polifolia rosmarinifolia* Torr., were from Wisconsin. The Wisconsin territory observed was along the south shore of Lake Superior, the lower Wisconsin and the Fox rivers and the region along Lake Michigan. In 1823 Lieutenant Stephen H. Long[13] (afterwards Major), led an expedition to the source of the St. Peters river, Lake of the Woods,

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[10] Genera of North American Plants. Thomas Nuttall. 1818.

[11] I have not been aple to see a copy of Frazer's catalogue for 1815, in which these original descriptions were published. Author.

[12] Silliman's Journal, (1) Vol. IV, p. 56. 1822.

[13] Narrative of an expedition to the source of the St. Peters River, etc. Under command of Maj. Stephen H. Long by W. H. Keating. Vol. I.

etc. This expedition starting from Chicago, traversed northern Illinois and southwestern Wisconsin, probably entering the state where the Pecatonica river leaves it, crossing the Mississippi river at Prairie du Chien. With this expedition were a number of scientific gentlemen including the zoologist Thomas Say. It was found at the last moment that the botanist who was to accompany the expedition would be unable to join it and Mr. Say undertook to perform his duties. The collection of plants made by him was sent to Lewis De Schweinitz for identification. In the narrative of this expedition a list of one hundred thirty species is published. The list, in addition to flowering plants, includes four lichens, two mosses and eight ferns. Of the entire number, only twelve species are assigned to Wisconsin and these only by inclusion. Besides the making of this collection, extensive notes were made on the general features of the flora and in a brief description of the country these find place. For the region to the north of the Wisconsin river mention is made of "the heavy growth of pine on the hills" and "the abundance of wild rice in the swampy places"; for that between the lower Wisconsin and Fox rivers and the Illinois river thirteen species of trees are specifically referred to; for the "Wisconsin Hills" nine species of trees are definitely mentioned, while for the immediate neighborhood of Prairie du Chien four tree forms are noted. Twenty-tree species of small woody plants are likewise mentioned as occurring. After the lapse of eight years, the government Indian agent at Detroit, Henry Rowe Schoolcraft,[14] went to the country about the head of Lake Superior, as far south as Galena, and finally to the head waters of the Mississippi river for the purpose of improving the relations between the government and the various tribes of Indians of the territory visited. With Schoolcraft's party went Dr. Douglas Houghton as surgeon and naturalist and to him was intrusted the botanical observations and the collecting of specimens. In 1831 the expedition kept to the south shore of Lake Superior to the mouth of the Mauvais or Bad river, in what is now Ashland county. It ascended this stream by the branch now known as the White river as far as practicable, making at this point a portage into a lake, called by the Indians "long water"; this is probably the lake now known as Long Lake in the southern part of Bayfield county. From this lake

[14] Narrative of an expedition through the upper Mississippi to Itasca Lake, the actual source of that river in 1832. N. Y. 1834. pp. 160—165.

a portage was made into the Nemacagon river, thence the route was down the stream just named to the St. Croix river and down the latter to its junction with the Yellow river. From this point the St. Croix and Nemacagon rivers were reascended to a point near the center of what is now Washburn county and a portage made to the head waters of the Red Cedar river. From here the route was down the Red Cedar, Chippewa and Mississippi rivers to Galena. For the return trip the party was divided. A part of it ascending the Mississippi and Wisconsin rivers to Fort Winnebago, the present site of Portage, the remainder travelling across country in a general northeasterly direction to Blue Mounds and thence to Fort Winnebago. From this point the party descended the Fox river and Green Bay to Lake Michigan, and followed the shore of the lake to Sault St. Marie. The next year Schoolcraft and his party again set out to reach the source of the Mississippi river and followed the south shore of Lake Superior and the St. Louis river to the western border of the state. Later in the summer on their return trip they pass from the Mississippi into the St. Croix, up this stream to its source, thence across to the head of the Brulé and down the latter to Lake Superior, thence back to St. Mary's along the south shore. On these expeditions specimens of two hundred forty-seven plants were collected. The list includes besides flowering plants and ferns, one leafy moss, one liverwort and two lichens. Thirty-seven flowering plants, one moss, one liverwort and one lichen are specifically assigned to Wisconsin, while ninety-one other flowering plants, two club mosses, one fern and one equisetum may have been collected in our territory, but are not definitely so assigned. Of the eight species listed as new, three were found in Wisconsin.

Mr. John L. Riddell, lecturer in chemistry and member of the Historical and Philosophical Society of Ohio, published in 1835 "A Synopsis of the Flora of the Western States."[15] The region covered by this paper includes a narrow strip along our southern border. In this catalogue no plants are definitely assigned to this state, though in the general distribution of many our territory is included. The following year Increase A. Lapham settled in Milwaukee and immediately began his work upon our flora. That same year he

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15 Western Journal of Med. and Phys. Science. Jan. and April, 1835. Cincinnati, Ohio.

published a list[16] of two hundred thirteen plants found and identified by him in the neighborhood of Milwaukee. Of this list nine are ferns and fern allies. The remainder are flowering plants. Two years later he published a second list,[17] which included the plants found in the first. In this second list are included three hundred ninety-nine flowering plants, fifteen ferns and fern allies and two mosses. In 1840 a supplementary list[18] of one hundred forty flowering plants and five ferns appeared. About three years later Lapham published a "list[19] of some of the more useful or interesting plants of Wisconsin." Here appear the names of one hundred seven-two flowering plants and four scouring rushes and also a short summary of the number of plants already identified for Wisconsin territory. Up to that time six hundred seventy-eight flowering plants and ferns had been listed for Milwaukee County. In adjoining counties ninety-seven additional species had been listed, while in northern Wisconsin eighty-two additional species had been reported, making a total at that time for the state of eight hundred fifty-seven species exclusive of mosses and all forms below them. In 1852 a catalogue,[20] much more pretentious than any which precedes it, makes its appearance. It enumerates nine hundred forty-nine species, sixteen of which are mosses, liverworts, lichens and a single chara, the remaining nine hundred thirty-three being flowering plants and ferns. The catalogue proper is preceded by a very brief historical sketch of the published work upon the flora of the state prior to Lapham. One year later the grasses of Wisconsin and the neighboring states are considered in a descriptive catalogue.[21] One hundred forty-nine species including cultivated forms are here described at length. Twelve lithographic plates accompany the text. In addition to the descriptions of species a general discussion of uses, distribution and value of the group is included. No attempt is made to designate the forms which occur in Wisconsin. In 1855, two years after the appearance of his paper on the grasses, we find the versatile Lapham producing a

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[16] A Catalogue of Plants and Shells found in the Vicinity of Milwaukee on the west side of Lake Michigan. I. A. Lapham. Milwaukee, W. T. 1836.

[17] A Catalogue of Plants found in the Vicinity of Milwaukee, Wisconsin Territory. I. A. Lapham. Milwaukee, W. T. 1838.

[18] Supplement to Catalogue of Plants. I. A. Lapham. Nov. 1840.

[19] Topographical and Geographical Description of Wisconsin. p. 77. I. A. Lapham. Milwaukee, Wis. 1844.

[20] Plants of Wisconsin. Trans. Wis. State Agric. Soc. Vol. II, pp. 375—419. 1852.

[21] The Grasses of Wisconsin and the Adjoining States of Ill., Ind., O., Mich., Terr. of Minn. and Regions about Lake Superior. Trans. Wis. State Agric. Soc. Vol. III, pp. 397—488. 1853.

semi-popular one[22] concerning Wisconsin's forest trees. In this paper sixty indigenous trees are described at length in popular language. many descriptions being accompanied by small cuts in the text of the leaf and fruit. Lapham's last published work concerning Wisconsin's flora was that done in conjunction with Messrs. J. G. Knapp and H. Crocker. The three were appointed by authority of the legislature as a committee to investigate the effects of the Destruction of Forest Trees. Their report[23] was published in 1867 and contains among other things a long list of trees thought to be be desirable for cultivation in Wisconsin.

(To be continued.)

# The Bubonic Plague.*

By *Frederick G. Novy.*

In ancient writings references are found which would seem to indicate the existence of the plague at a very early date. The Bible contains several such references (Deuteronomy, Chapter 28, paragraph 27; Samuel I, Chapter 5, paragraphs 6, 9). The latter especially deals with the plague which attacked the Philistines after they took the ark. The rôle of rats in the dissemination of the disease is, as some believe, apparently referred to in the trespass offering of "five golden emerods and five golden mice." The return of the ark, together with this trespass offering, brought also the plague, "because they had looked into the ark of the Lord, even He smote of the people fifty thousand and threescore and ten men." Poussin's painting of this Philistine plague, exhibited in the Louvre, shows several dead rats on the streets. It is evident that the susceptibility of the rat to the plague had been noticed even at this early date. The plague of boils visited upon the Egyptians as related in Exodus (Chapter 9, paragraphs 9 and 10) has also been taken to indicate the pest of to-day, but neither of these scriptural references can be said to be sufficiently definite.

The Attic plague, which ravaged the Peloponnesus 430 years

* Continued from p. 513.

[22] The Forest Trees of Wisconsin. Trans. Wis. State Agric. Soc. Vol. IV, pp. 195—251. 1855.

[23] Report on the Disastrous Effects of the Destruction of Forest Trees now going so rapidly in the State of Wisconsin. I. A. Lapham, J. G. Knapp and H. Crocker. Commissioners, Madison. 1864.

before Christ, has been accurately described by an eye-witness, the historian Thucydides. His narration may be considered the earliest exact record of an epidemic. Like all the great epidemics of subsequent ages, it was ushered in by the overcrowding, the misery and the famine consequent upon prolonged wars. The combustible material was there, and all that was necessary was the spark to begin the work of death and devastation. It is noteworthy that the origin of the pest was traced by Thucydides to Egypt or Ethiopia, from whence it spread gradually overland to Asia Minor and thence by boat to Athens. The nature of this first great historic epidemic is and will remain uncertain. There are those who consider the Attic pestilence as one of bubonic plague, but the fact that in the very careful description of the disease no mention is made of buboes and the statement that death occurred from the seventh to the ninth day would indicate that the disease was something else. Buboes are characteristic, it is true, of the plague, but it should be remembered that outbreaks of the pneumonic form, with little or no glandular enlargement, are not uncommon. Death, however, in the case of plague is very common on the second or third day, and is less liable to occur in more protracted cases. These facts lead to the commonly accepted belief that the Attic pest was not the bubonic plague. It may have been typhus fever, possibly smallpox.

The great pestilence which devastated Rome and its dependencies in 166, Anno Domini, is known as the plague of Antoninus or of Galen. This prolonged epidemic was brought to Rome by the returning legions from Seleucia. It was not characterized by buboes, and it is very probable that it was largely smallpox. On the other hand, the plague of Saint Cyprian, which prevailed from 251 to 266 Anno Domini, may have been partly bubonic in nature, since it prevailed during the fall and winter months and ceased during the hot summer. The disease was said to be communicated by means of clothing and by the look. It spread from Ethiopia to Egypt and thence through the known world.

Although the above early epidemics cannot be identified with the bubonic plague, there is nevertheless excellent evidence of the existence of this disease in remote antiquity. The first undoubted testimony on this point is that furnished by Rufus of Ephesus, who lived in the first century of the Christian era. The writings of this author are no longer extant, but they are quoted by Oribasius, the physician

and friend of Julian the Apostate, who lived in the fourth century. The writings of Oribasius were discovered in the Vatican Library and were published early in this century by Cardinal Mai. In the forty-fourth "Book of Oribasius" occurs the extract taken from Rufus of Ephesus, from which it appears that "the so-called pestilential buboes are all fatal and have a very acute course, especially when observed in Libya, Egypt and in Syria. Dionysius mentions it. Dioscorides and Posidonius have described it at length in their treatise upon the plague which prevailed during their time in Libya." The description which then follows of the buboes and of the disease is an exact counterpart of the present plague. The writings of the authors quoted by Rufus are no longer extant, but one thing is certain, and that is that the Dionysius referred to lived not later than 300 years before Christ. The other two physicians lived in Alexandria contemporaneous with the birth of Christ. It may, therefore, be considered as an established fact that the plague existed in Egypt, Libya and Syria as early as 300 years before Christ. This is of especial interest in view of the recent discovery of Koch of an endemic plague focus in British Uganda and German Kisiba, at the headwaters of the Nile. Whether it ever invaded European territory prior to the sixth century is unknown.

The great plague of Justinian which broke out in 542 Anno Domini appeared first in Egypt, and from thence it spread east and west throughout the known world and persisted for more than a half century. So unknown was the plague in Europe at that time that the physicians of Constantinople considered it a new disease. Procopius, who was an eye-witness of the plague at Constantinople, states that the daily mortality in that city was at times over 10,000.

The pandemic of Justinian resulted in the distribution of the plague for the first time throughout the length and breadth of known Europe. From that time on the early chronicles make repeated mention of devastating plagues consequent upon the miseries of war and famine. The descriptions of these pestilences are, as a rule, insufficient to identify them with the bubonic plague. Typhus, scurvy, smallpox and other diseases undoubtedly alternated in the work of destruction. Of the scores of epidemics thus recorded during the eight centuries following this first visitation few, indeed, can be identified to a certainty with the bubonic plague, and yet there can be no doubt but that this disease occupied no second rank during the dreary

darkness of the middle ages. This era in history may be said to have been ushered in by the Justinian plague, and it was closed by an even more disastrous outbreak of this same disease. All the ravages and slaughter consequent upon the great historic battles, when taken together, pale into insignificance on comparison with that dread visitation of the fourteenth century, the "black death."

It is noteworthy that this great historic epidemic did not originate in Egypt, as did many of its predecessors. Without exception the contemporaneous writers ascribe its origin to Cathay, or the China of to-day. This fact is of interest when it is borne in mind that at the present time we know of the existence of two endemic foci in China, besides that of Gurhwal in India, of Beni Cheir in Arabia and of Uganda and Kisiba in Africa. Whatever may have been its source, the fact is that it advanced from the Orient along the three principal routes of travel. One of these led from the Persian Gulf through Bassorah and Bagdad along the Euphrates, across Arabia to Egypt and Northern Africa. Another route passed from India through Afghanistan, and skirting the southern borders of the Caspian and Black Seas, eventually reached Asia Minor. A third route from Turkestan and China led around the northern shore of the Caspian Sea to Crimea, and thence to Constantinople. It was along these several routes that the plague advanced and spread over most of Western Asia and Northern Africa.

The European black death, however, can be traced with accuracy to the Crimean peninsula. Gaffa, a town in Crimea, now known as Theodosia, had been founded and fortified by the Genoese. It, as well as other cities along the Black Sea, was largely populated by Italians. One of these, Gabriel de Mussis, a lawyer in Gaffa, has left a faithful account of his experience and share in the introduction of the plague into Europe. In 1346 in the Orient numberless Tartars and Saracens were attacked with an unknown disease and sudden death. In the city of Tanais, through some excess, a racial struggle ensued between the Tartars and the Italian merchants. The latter eventually escaped and took refuge in Gaffa, which in time was besieged by the Tartars. During the siege, which lasted three years, the Tartar hordes were attacked by the plague, which daily carried off many thousands. The besiegers, despairing of reducing the city by direct attack, attempted to do so in another way. By means of their engines of war they projected the dead bodies into the beleagered city, which, as a

result, soon became infected. The Christian defenders took to their ships, and abandoning Gaffa, sailed westward, touching at Constantinople, Greece, Italy and France.

Wherever the infected vessels touched they left the plague. Constantinople thus became infected early in 1347. During the summer Greece, Sardinia, Corsica and parts of the Italian coast developed the disease. In the fall it reached Marseilles. The following year it spread inland into Italy, France, Spain, and even into England. In another year or two it spread over Germany, Russia, and crossed to the Scandinavian peninsula. Within four years it had completed the circuit of Europe, spreading untold death and misery. No greater catastrophe has been recorded in the history of the world.

The rapidity with which the disease spread among the fugitives from Gaffa, and in the cities visited by their ships, is despairingly narrated by De Mussis, who, returning in one of the ships to Genoa, says: "After landing we entered our homes. Inasmuch as a grave disease had befallen us, and of the thousands that journeyed with us scarcely ten remained, the relatives, friends and neighbors hastened to greet us. Woe to us who brought with us the darts of death, who scattered the deadly poison through the breath of our words." According to this writer, 40,000 died in Genoa, leaving scarcely a seventh of the original population. Venice was said to have lost 100,000, Naples 60,000, Sienna 70,000, Florence 100,000. All told, Italy lost half of its population.

Of the contemporaneous writers none has printed the horrors of the plague more vividly than does Boccaccio in his introduction to the "Decameron."

"What magnificent dwellings, what notable palaces were then depopulated to the last person! What families extinct! What riches and vast possessions left, and no known heir to inherit! What numbers of both sexes in the prime and vigor of youth, whom in the morning either Galen, Hippocrates, or Æsculapius himself but would have declared in perfect health, after dining with their friends here have supped with their departed friends in the other world!"

From Marseilles the plague spread through Provence with disastrous results. In some monasteries not even a single survivor was left. In one of these Petrarch's brother buried thirty-four of his companions. At Avignon, the seat of the Pope, 1,800 deaths occurred in three days. In Paris more than fifty thousand died of the plague.

In England the black death appeared in August, 1348, and continued till the autumn of 1349, when it disappeared. London, which at that time probably had a population of 45,000, had a mortality of about 20,000. No exact statement can be made of the relative mortality in England, although many undoubtedly extravagant guesses are recorded by contemporaneous writers.

It is estimated that the population of Europe previous to the outbreak of the black death was about one hundred and five millions. One quarter of the population, or about twenty-five millions, are said to have died of the plague. This may be but a mere estimate, it may be grossly inaccurate, but it nevertheless indicates the deadly character of the pestilence. According to a report made to Pope Clement VI, the total mortality for the known world was placed at forty-three millions. One-half the population of Italy succumbed. The Order of Minorites in Italy lost 300,000 members. The Order of Capuchins in Germany lost 126,000 members, while the total of deaths in Germany was placed at 1,200,000.

The invasion of Europe by the black death was sudden and rapid. The seeds of the disease, once planted on European soil, persisted, as might be expected, for no little time. Although the great epidemic was said to have lasted till 1360, it must not be inferred that it then ceased altogether. Diverse localities retained the infection, and, as a result, new outbreaks, though to a less extent, continued to outcrop during the following years. From that time on every decade or two witnessed more or less pronounced outbreaks of the disease in France, England and Italy. The chroniclers of those local outbreaks during the latter half of the fourteenth and during the entire fifteenth century did not always make it clear that the pestilence described was the real plague. It was but natural to include typhus and other diseases under the dreaded term of pest. Nevertheless, the frequency of these outbreaks indicates the persistence and the wide dissemination of the plague during those years.

During the sixteenth century the plague apparently began to show a decrease in its frequency, although during this period, as before, other epidemic diseases were mistaken for it. Germany, Holland, certain cities in France, and especially in Italy were scourged by the plague during this century. The noteworthy outbreak in Italy in 1575—77 was due to fresh importation from the Orient. The disease spread throughout Italy, and the devastation it caused was not in-

ferior to that of the great plague two centuries before. For example, in 1576 in Venice 70,000 died of the disease.

During the seventeenth century the plague asserted itself with great severity. Following a famine, it prevailed in Russia in 1601 to 1603, and some idea of its destructiveness may be gained when it is stated that in Moscow alone 127,000 lives were taken. During the following decade even greater epidemics prevailed in Western Europe. France and England were invaded, and in Switzerland it even penetrated to the highest Alps. Basel in 1609—1611 had 4,000 deaths, while London in 1603 yielded 33,000.

The terrible epidemic which ravaged Northern Italy in 1629–1631 deserves more than a passing notice. During those years more than a million died of the disease. Scarcely a town in Northern Italy escaped. The city which, perhaps, suffered the most was Milan, where, in 1630, the deaths from all diseases are said to have amounted to 186,000. The Milan outbreak has been graphically described by Manzoni, in his celebrated "I Promessi Sposi." Unrecognized, the disease entered Milan in October, 1629. The mild cases which were met with during the winter months lulled the fears of the people and encouraged the mass of physicians to deny the existence of the plague. But in April the disease began to assert itself in terrible earnest. The frenzied populace, blind to the contagiousness of the disease, were possessed with the strange hallucination that obtained during former plague epidemics in other Italian cities, that the pest spread because of poison scattered about by evil-minded persons. Suspicious strangers were, as a result, stoned in the streets, imprisoned and even put to death by legal process because of such fanatical beliefs. To offset the growing pestilence, the people demanded of the Archbishop that a solemn religious procession be held, and that the holy relics of Saint Charles be exposed. At first this was refused, but eventually it was granted. The procession bearing the saintly body was solemnly held on the 11th of June. The fanatical security which these devotions engendered was rudely shattered when, a few days later, the disease burst forth with renewed activity among all classes in all parts of the city. Nevertheless, as Manzoni observes, the faith was such that none recognized that the procession itself was directly the cause of the new outburst of the disease by facilitating the spread of the contagion. Again the belief asserted itself that the "untori," or poisoners, mixed with the crowd and with their unguents and powders

had infected as many as possible. From that day the fury of the contagion continued to grow to such an extent that scarcely a house remained exempt from the disease. The number of patients in the pesthouse rose from 2,000 to 12,000 and later reached 17,000. The daily mortality rose from 500 to 1,200, then 1,500, and is even said to have reached 3,500. Milan, before the epidemic, was said to have had a population of from 200,000 to 250,000. The loss by death has been variously estimated at from 140,000 to 186,000. All these deaths were not due to the plague. Thus, large numbers of children died as a result of starvation consequent upon the death of their parents from the plague.

The horrors attendant upon such a dreadful visitation can well be imagined. Scarcity of help in removing the dead and in taking care of the sick made itself felt, to say nothing of the lack of food. Enormous trenches, one after another, were filled with the bodies of the victims, carried thither by the hardened *monatti*, the counterpart of the Florentine *becchini*, so well portrayed by Lord Lytton in his "Rienzi." These bearers of the sick and dead were naturally recruited from the lowest criminal classes, and it can, therefore, cause but little wonder that an epidemic of the worst of crimes was associated with that of the plague.

In 1656 Italy was again invaded by the plague, and on that occasion Genoa lost 65,000 of its population by death. About the same time terrible epidemics of the disease ravaged Russia, Turkey, and Hungary.

London, in 1665, suffered dreadfully from the plague. The disease appears to have been imported from Holland, where it was known to have existed for some time. The progress of the disease in London has been vividly portrayed by Defoe in the "Journal of the Plague Year" and in the "Due Preparations for the Plague."

It is supposed that the pest had been imported in bales of goods from Smyrna into Holland in 1663. From thence it crossed over to London, where the first deaths were reported about the first of December in 1664. Toward the end of that month another death occurred in the same house, but during the following six weeks no new case developed. About the middle of February, however, a person died of the plague in another house. From that time only occasional cases of plague were reported, although the weekly mortality was rapidly rising and was greatly in excess of the usual rate. Thus,

while the ordinary weekly mortality ranged from two hundred and forty to three hundred, this was gradually increased, so that in the third week in January it had risen to four hundred and seventy-four. After a slight remission, the mortality again rose, so that early in May plague cases were reported more frequently. It soon became evident that the plague, as in Milan in 2630, had slowly but surely gained a firm foothold. The increased mortality was undoubtedly due to unsuspected plague cases of either the pneumonic or the septicemic type.

During May, and especially during the hot weather in June, the disease continued to spread. At the same time, the panic-stricken people began to leave the city in large numbers. In July the condition was truly deplorable. To quote Defoe:

"London might well be said to be all in tears; the mourners did not go about the streets, indeed, for nobody put on black or made a formal dress of mourning for their nearest friends; but the voice of mourning was truly heard in the streets. The shrieks of women and children at the windows and doors of their houses, where their dearest relations were perhaps dying, or just dead, were so frequent to be heard as we passed in the streets, that it was enough to pierce the stoutest heart in the world to hear them. Tears and lamentations were seen almost in every house, especially in the first part of the visitation; for toward the latter end men's hearts were hardened, and death was so always before their eyes, that they did not so much concern themselves for the loss of their friends, expecting that themselves should be summoned the next hour."

London at this time had a population of nearly half a million. The deaths from the plague during 1665, as reported in the bills of mortality, are 68,596. By far the larger number of these occurred in August, September and October. The weekly mortality from the disease rose from a few cases in May to over 7,000 per week in September. It may, indeed, be close to the truth when Defoe states that 3,000 were said to have been buried in one night.

The great plague of London in 1665 was by no means the only visitation of that kind. From the time of the black death in 1348, London had a continuous record of plague infection. On an average it had an epidemic of plague every fifteen years. Some of these were fully as severe as that of 1665. Thus, in 1603, with a population

of 250,000, there were over 33,000 reported deaths from the plague. In 1625, 41,000 died of pest out of a population of 320,000.

One of the most remarkable facts in connection with the great plague is this—that it was the last in England. The great fire of 1666 is supposed to have extinguished the plague, but this cannot be said to be true. The disease continued to a slight extent in 1666 and isolated cases were reported as late as 1679, but after that date it disappeared completely and from that time until this year England has been absolutely free from the plague. The sudden extinction of the plague in England after it had become domesticated, so to speak, for nearly three centuries, is indeed difficult to explain. Creighton sees an inhibiting influence in the growth of the practice of burial in coffins. But the absence of famine, together with the cessation of domestic wars and strife and the abeyance of want and misery, had not a little effect. As will presently be seen. the extinction of the plague in England was no more remarkable than its disappearance from Western Europe.

The history of plague in the seventeenth century does not close with the London epidemic. From 1675—1684 the disease ravaged Northern Africa, Turkey, and from thence invaded Austria and even reached Southern Germany. The Vienna outbreak of 1679 can be said to have been no less terrible than that of Milan or of London. The deaths from the plague in Vienna in that year have been variously estimated at from 70,000 to double that number.

From Vienna the plague reached Prague, where in 1661 it is said to have caused no less than 83,000 deaths. It is not to be wondered at that a nation scourged by thirty years of relentless warfare, by religious persecution and finally tried thus severely by the plague should inscribe upon the equestrian statue of their patron saint the heart-rending appeal, "Lord, grant that we do not perish."

(To be continued.)

## MONTHLY REVIEW.

### Chemistry.

**Oxydase in Valerian.**—It is well known that the fresh root of *Valeriana officinalis* does not possess the peculiar penetrating odor of valerianic acid, which only develops as the root dries. P. Carles shows that this formation

of the volatile oil is due to the action of an oxydase, which may be precipitated from the juice of fresh valerian root by the addition of alcohol. A portion of fresh juice of the root, heated to destroy the ferment, does not develop the characteristic odor, while another portion not so heated gradually acquires the smell of valerianic acid. Further, if a little of the ferment precipitated by alcohol be added to the juice previously freed from oxydase by heating, it also will develop the valerianic odor. The ash of valerian is shown to contain manganese, apparently as an organic compound, which probably acts as a carrier of oxygen, on which the activity of the oxydase depends. The observations are suggestive as throwing light on the influence of those ferments, which are very widely distributed in the vegetable kingdom, on the maturing of drugs by keeping.

[Pharm. Journ., 65, p. 337; from Journ. Pharm. Chim., [6], 12, p. 148.] *E. K.*

**Medicinal Plants of the Ivory Coast.**—E. Heckel contributes some important details concerning some medicinal and toxic plants that are employed by the natives of the Ivory Coast in Western Africa, based on information supplied by Dr. Mondon. A specimen of strophanthus was found on examination to be *S. hispidus* DC., but with tendencies to numerous variations towards *S. minor* Pax.; it would appear that the natives prefer to prepare their arrow-poisons from *S. hispidus* rather than from *S. gratus* Frauchet, which is considered more potent. They know well how to treat the plant so as to increase its toxicity, by grinding the leaves and seeds together with banana flowers, and allowing the mixture to ferment. The resulting paste is used for poisoning arrows, either for war or the chase. The plant *Cassia alata* L. is used on the Ivory Coast for the same purpose, viz. skin disease, as is the case in extreme eastern countries, among Hindoos, Annamites, and inhabitants of Tonkin. The fresh leaves are bruised and applied direct to cutaneous affections characterized by eruptions or even pustules. *Cassia occidentalis* L. is important as a purgative and diuretic in the treatment of fevers accompanied by jaundice, being administered in the form of an infusion of the leaves. The stem is a violent purgative. Europeans find a draught of the infusion of the leaves in the early morning an excellent preventive of sick headache; it is useful also in cases of yellow fever. Another well-known remedy, *Abrus precatorius* L., is prescribed by native doctors in the form of infusion of the leaves in the treatment of colic, and the chopped-up leaves are used locally as a remedy in certain eye diseases. It would be well if a chemical examination were made of the leaves, in order to determine whether abrine exists in them as well as in the seeds.

[Pharm. Journ., 65, p. 439; from Revue Cult. Colon, 7, p. 548.] *E. K.*

**Quinine Glycerophosphate.**—Prunier finds that the method of preparing glycerophosphate of quinine from quinine sulphate and glycerophosphate of

lime by double decomposition is liable to produce a certain amount of calcium sulphate under some conditions of temperature and with some dilutions of alcohol. He prefers Falière's method, whereby glycerophosphoric acid is saturated with hydrate of quinine, modified to this extent, that the glycerophosphoric acid is prepared at the time by treating an aqueous solution of glycerophosphate of lime in the cold with oxalic acid in molecular proportions. The calcium oxalate carries down with it a little glycerophosphate, but that does not matter; it is necessary, however, to avoid the use of an excess of oxalic acid, lest oxalate of quinine be subsequently formed. The main points of the process are as follows:—A saturated solution of glycerophosphate of lime is slowly poured into a solution of oxalic acid, with careful agitation until the former is slightly in excess, as indicated by filtering off a portion and adding oxalic acid to the filtrate, when a precipitate should form. The mixture is allowed to stand for some hours in order to precipitate the whole of the oxalic acid, and then filtered. The filtrate should give a faint precipitate when a portion is treated with oxalic acid, and have an acid reaction; to it is then added, little by little, a slight excess of powdered quinine suspended in water and the mixture is set aside till it has an alkaline reaction to tournesol. The saturation is effected in the cold at first, and afterwards at the boiling point, in order to dissolve the quinine. Hot filtration is then resorted to in order to remove excess of quinine; lastly, the filtrate is cooled to induce crystallization of the basic glycerophosphate of quinine. The salt so obtained crystallizes with five molecules of water, and has the following composition:—Quinine, 70; glycerophosphoric acid, 19; water, 11. It is soluble in about 600 parts of cold water and in less than 100 parts of hot water; it is readily soluble in alcohol, in glycerin and in acids, but less soluble in ether and in chloroform. At 60° C. the salt turns brown and begins to decompose; it should be dried, therefore, at the temperature of the air.

[Pharm. Jour., 65, p. 439; from Journ. de Pharm., 12, p. 272.] *E. K.*

**Aloins.**—The color reaction of Klunge, obtained by the addition of cupric sulphate and sodium chloride solution to an aqueous solution of barbaloin, has been regarded as characteristic of that aloin. E. Léger finds, however, that the red color developed is not due to barbaloin at all, but to the accompanying iso-barbaloin; pure barbaloin obtained by repeated re-crystallization does not give this reaction, but the iso-barbaloin thus separated gives an intense violet-red color. Léger goes further, and employs the reagent of Klunge to purify barbaloin from its accompanying iso-compound, heating the aloin with solution and collecting the crystals which separate on cooling. In this way an aloin is obtained which ceases to react with Klunge's solution, and is, according to the author, pure barbaloin. When re-crystallized from methylic alcohol, it is of a paler color than the impure aloin; it gives no color reaction either with Klunge's reagent or with

$HNO_3$. Its triacetyl-trichloro-compound melts at 164°.8 C. The author is examining Cape aloes, which he finds to contain barbaloin, as well as another aloin differing from those hitherto described by him.

**Charcoal and Alkaloids.**—H. Laval has investigated the well-known absorbent action of animal charcoal on solutions of alkaloids and their salts. He has experimented with ordinary animal charcoal, pure animal charcoal containing 90 p. c. of carbon, tricalcic phosphate obtained by the complete incineration of bone ash, and with precipitated tricalcic phosphate. He finds that both the latter absorb notable quantities of alkaloids from alcoholic or from aqueous solutions, the precipitated form being slightly more active. Ordinary animal charcoal is yet more active, but pure animal charcoal (90 p. c.) is markedly the most absorbent of all. The length of time of contact does not influence the amount of alkaloid removed from solution, which is increased with the quantity of charcoal employed without being directly proportional to this quantity. The weaker the alkaloidal solution the greater is the amount absorbed by the same proportion of charcoal to the alkaloid. The nature of the solvent influences the amount of alkaloid removed by the charcoal; aqueons solutions losing more than alcoholic. Boiling alcohol will remove from charcoal the alkaloids it has extracted from aqueous solutions. For the same weight of charcoal, the absorbtion increases rapidly with the concentration of the alkaloidal solution. It is unaffected by temperature between 15° and 100° C. The nature of the acid combined with the base is without material influence on the result, different salts of the same alkaloid having virtually the same coefficients of absorption. The amount removed from alkaloidal solutions of the same strength by the same proportion of charcoal varies with different alkaloids. Thus 10 Gm. of pure animal charcoal will remove 95 p. c. of the strychnine in 100 C.c. of a 1 p. c. solution, while it removes 75 p. c. of quinine, 73 p. c. of morphine, and 68 to 69 p. c. of atropine, cinchonine, and cocaine from aqueous solutions of the same strength.

**Physiological Action of Senecio Jacobœa.**—J. M. Bunch finds that the injection of small doses of the alcoholic extract of the entire plant of the ragwort into the circulation causes general rise of blood pressure, with constriction of the peripheral vessels, and of the vessels of the intestinal area, while the heart contractions are lessened. Large doses cause a fall of general blood pressure, with dilation of the intestinal vessels, and inhibition of peristaltis. The entire plant, therefore, appears to contain two active principles. The portion of the alcoholic extract which is soluble in water does not contain the body which causes the rise of blood pressure.

[Pharm. Journ., 65, p. 261; from Brit. Med. Journ., 1900, p. 212.] *E. K.*

**Myristica Kinos.**—D. Hooper describes two varieties of liquid kino obtained from wild nutmeg trees of India. One—from *Myristica gibbosa* Hook. f. and T.—can be used as a varnish and, after evaporation to dryness, leaves a mass which resembles Malabar kino when coarsely powdered. It contains 33.6 percent of tannin (kino-tannic acid), is quite soluble in hot water and practically so in rectified spirit, though some calcium acid tartrate is left undissolved in the latter case. The aqueous solution has an acid reaction and is of a deep red color. The second liquid kino—from *M. kingii* Hook. f.—leaves a mass which contains 30.2 percent of tannin, and in this case also calcium tartrate is present. It is thought that, if the fresh juices could be collected in quantity and evaporated without delay, the residue would be an admirable substitute for commercial kino.

[Pharm. Journ., 65, p. 261; from Agr. Ledger, 1900, p. 44.] *E. K.*

**The Testing of Cocaine Hydrochlorate.**—H. Helbing and F. W. Passmore comment as follows upon the cocaine tests of the fourth edition of the German Pharmacopœia:

The permanganate test for freedom from cinnamyl compounds is stated in a form free from the objections urged against the B. P. test, a definite amount of permanganate being added, and observation directed to any change in the color of the solution, and not of the precipitate, during the next half hour.

A test for purity of the alkaloid based upon the differences in solubility of the chromate in acidulated water, bears out Merck's criticism of the chromate test suggested by Schaeffer (C. & D., 1899, p. 591). As it now stands, 0.05 gramme cocaine hydrochloride dissolved in 5 cc. water should, on addition of 5 drops chromic acid solution, give transient yellow precipitates with each drop, disappearing on shaking, but on the further addition of 1 cc. hydrochloric acid the precipitate must reappear. We have applied this test to four different samples of cocaine hydrochloride representing the best known makes. All of the samples answered the original Schaeffer test, but only one gave a decided precipitate on addition of 1 cc. of hydrochloric acid of standard (25 percent) strength to the clear chromated solution; a second sample gave a marked turbidity, whilst the remaining two gave clear solutions in which a faint turbidity appeared after standing a quarter of an hour. It was noted, however, that if the hydrochloric acid were added to the chromated solution drop by drop a precipitate formed in each case, attaining its maximum bulk when about 0.5 cc. acid had been added, and on addition of the remainder of 1 cc. acid disappearing in two cases completely, and in the other two cases partly. Altogether, in our experience, we do not think the chromate test, at any rate in its present form, reliable.

The MacLagan test has also undergone modification in the new edition of the German Pharmacopœia, which reads as follows:—"If 4 drops of am-

monia be added to the solution of 0.1 gramme cocaine hydrochloride dissolved in 100 cc. water and the mixture allowed to stand quietly, no turbidity should appear within an hour." Considering that Professor Attfield correctly gave expression in his Report to the opinion then current that "the MacLagan test has emerged scatheless from vigorous attacks in Germany" and the majority of German cocaine manufacturers have vigorously contradicted Gunther's later researches, the new modification comes as a surprise. We have made comparative tests of the samples referred to by MacLagan's method as given in the B. P. and by the new German official test, which is practically that recommended by Gunther. All the samples stood the test of the German Pharmacopœia, whilst only three passed the MacLagan test of the B. P. In the following table we collate the results of our tests:—

| — | I. | II. | III. | IV. |
|---|---|---|---|---|
| Chromate Test of P. G. IV. | Does not answer test; precipitate formed and redissolved. | Does not answer test; precipitate formed and redissolved. | Answers test. | Answers test, but turbidity slight. |
| MacLagan Test of P. G. IV. | Answers test. | Answers test. | Answers test. | Answers test. |
| MacLagan Test of B. P. | Answers test. Crystalline precipitate formed in two minutes, and deposited, leaving supernantant liquid clear. | Answers test. Crystalline precipitate formed in four minutes, and deposited; supernatant liquid less clear than I. | Does not answer test. No distinct crystalline precipitate, but milky appearance after stirring ten minutes. | Answers test. Crystalline precipitate formed in five minutes, and deposited, leaving supernatant liquid clear. |

From the foregoing it is perfectly clear that the new German Pharmacopœia tests for cocaine hydrochloride are open to strong criticism. Not only the chromate test but also the modified MacLagan test appears to be lacking in precision, for the four samples to which the latter test was applied, although evidently different in chemical composition, behaved all alike and furnished no evidence of difference in quality.

[Chemist & Druggist, 56, p. 306.] *W. A. P.*

**Adulterated Fennel.**—Fennel fruit is subject to adulteration with three sorts of the exhausted or partly exhausted drug. 1. Fruits exhausted by a current of steam. These are small, dark brown, deformed and easily crushed, and have a minimum oil content. 2. Fruits remaining from water distillation. Of brown color, but of somewhat better appearance than the above. 3. Fruits remaining from alcoholic distillation. Little changed in appearance, and containing from 1 to 2 p. c. of oil.

Neumann Wender states that at present chrome-yellow is used to color

these exhausted fruits. This fraud may be detected by moistening fruits in alcohol and rubbing them between the hands, when the color is removed.

[Pharm. Post, 33, p. 207.] *R. H. D.*

**Royal Cloves.**—In an interesting article, C. Hartwich tells of the so-called royal cloves.

The island of Maccian of the Celebes group was given as the home of this celebrated plant in the earliest known account found in "Museum Wormianum seu historia rerum rariorum. Lugduni Batavorum 1655, p. 203."

Regarding this abnormal growth many tales have been circulated, which show the high esteem in which the drug was held. According to the above cited account there was but a single tree, near the center of the island, which bore the royal cloves. As soon as the flowers blossom on this tree, all other trees which bear ordinary cloves lose their flowers, as though out of respect, and the ruler of the island surrounds the tree with guards so that no one but himself may enjoy it.

The natives call it "Thinka Radoi" and the Malays "Tsjenke Radja," which signify "Royal cloves."

Very detailed and repeated accounts were made by G. E. Rumphius of Hanau. The tree on the island of Maccian, from which the cloves of the Wormianum Museum evidently came, had disappeared long before 1680 and for a long time no other was known.

It is known that the Hollanders, after they had taken the Molucca islands from the Portuguese in 1605, cut down all the clove trees on the Ternate islands, in order that they might better control the trade.

In the nineteenth century but little mention has been made of them. In an article by Theo. Martius, Jahrbuch für praktische Pharmacie, 1851, p. 129, the figures of Rumphius and Wormius were reproduced.

A study of the cloves themselves makes it clear that we have here the structures of the ordinary clove fruit and flower, modified in various ways. There are three principal differences between these abnormal cloves and the ordinary, as follows:

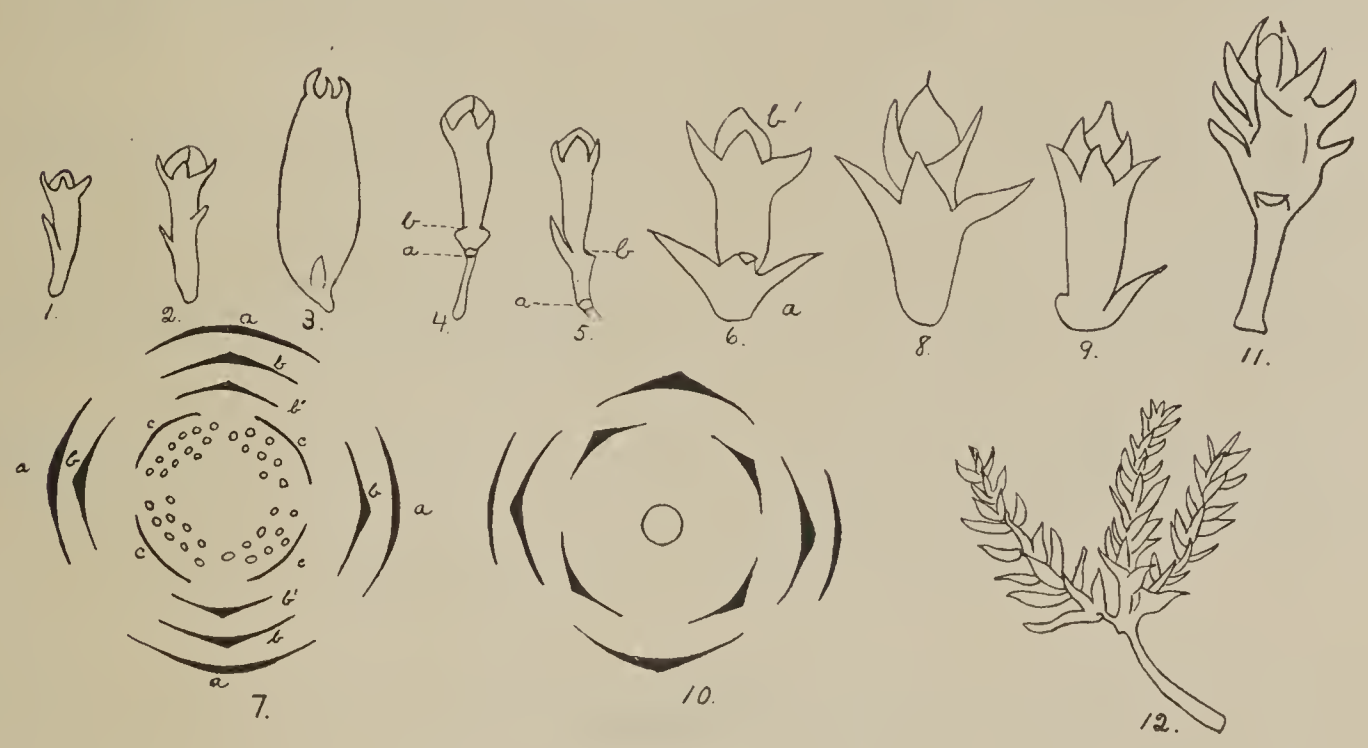
1. In the simplest case we find an increase in the number of bracts. This often occurs in ordinary cloves. If a quantity of ordinary cloves is examined, several will be found showing one or two extra bracts. Figs. 1, 2. This can also be occasionally observed on the clove fruits. Fig. 3. Many times flowers are found in which the two pairs of bracts are crossed with a third. Figs. 4, 5, 6. In specimens which show other abnormalities and which therefore belong in the second group, in place of the normal bracts is a four-leaved whorl whose divisions stand opposite the sepals. Fig. 6.

2. The second group includes only cloves in which the irregularities are found in calyx and corolla, usually together with those of group one. The earlier writers usually spoke of this as "double calyx." Hasty observation

shows that inside the normal calyx is a brown, hard pointed body. If this is now carefully examined, two cases may be differentiated.

a) In some cases two extra calyx leaves are formed inside the normal ones. Figs. 6, 7, 8.

b) Much commoner is the occurrence of hard brown bodies of four leaflets. These are not opposite, but alternate with the normal sepals. Although they resemble the hard almost horn-like nature of the sepals completely, we have to conceive them as metamorphosed petals. Figs. 9, 10.




**Explanation of Figures.**

Fig. 1. Normal clove with an extra bract. The normal bracts are not present.
Fig. 2. Normal clove with two extra bracts.
Fig. 3. Fruit of clove with one extra bract.
Fig. 4. Clove with extra bracts. a) The scars of the normal bracts. b) Scars of extra bracts.
Fig. 5. Clove showing one of the extra bracts still present.
Fig. 6. Royal clove with four parted whorl of bracts (a); and two extra sepals (b′).
Fig. 7. Diagram of Fig. 6. a. The four bracts. b. The normal sepals. b′. The two extra sepals. c. The petals.
Eig. 8. Royal clove. The difference between bracts and sepals is no longer apparent. The flower is divided into five indistinct, two-membered, alternating whorls.
Fig. 9. Royal clove showing petals changed to sepals.
Fig. 10. Diagram of Fig. 9.
Fig. 11. Royal clove similar to Fig. 9, but with a larger number of leaflets and the whorls indistinct.
Fig. 12. Twig of Royal clove, according to Rumphius. The flowers are completely changed into twigs covered with small, pointed, bract-like leaves.

In some cases, small petals and slightly developed stamens were found, but the pistil was not seen. Fig. 7. In the second case the petals are sepal-like and inside of them is to be seen a brown shrunken point. Longitudinal and transverse sections through such pieces, however, show no trace of

stamens. Fig. 10. It is worthy of mention, however, that in all pieces examined the ovary was well developed.

3. The third group shows the deformity still further advanced. The number of leaflets is so great that petals cannot be distinguished from sepals. The whole bud consists of sharp leaflets, but the hard, brown bodies of the second group are still to be seen. Fig. 11. Fig. 12 shows the leaves, which all resemble more or less the bracts of group one.

It is evident then that we have here an interesting case of the turning green of the flower, antholysy, the parts of the flower showing a tendency to change into foliage; in this special case into bracts.

The last figure (12) taken from Rumphius shows the flower petals changed at first to sepals and these in turn, not to be distinguished from bracts.

Another abnormal growth, shown mostly in group one, also playing an important role in other groups, is the multiplication of leaf organs called pleiotaxy, which includes bracts and sepals.

The stamens are in no way included in the abnormal growth, but are more or less reduced in all cases.

[Schw. Wochensch. f. Ch. & Ph., 38, p. 473.] *R. H. D.*

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# Literary.

## Books and Pamphlets Received.

P. Blakiston's Son & Co.—Philadelphia. Victor von Richter's text-book of inorganic chemistry edited by H. Klinger. Authorized translation by E. F. Smith. Fifth American from the tenth German edition, carefully revised and corrected, with sixty-eight illustrations on wood and colored lithographic plate of spectra. pp. xii, 430. Price $1.75. 1900.

Verlag des Deutschen Apotheker-Vereins. — Besonderer Abdruck a. d. Archiv der Pharmacie. 1. Ueber die Früchte von Rhamnus Cathartica, von A. Tschirch und R. Polacco, pp. 19. 2. Beiträge zur Kenntniss der Senna, von A. Tschirch und E. Hiepe, pp. 22. 3. Ueber den Harzbalsam von Abies canadensis, von A. Tschirch und Ed. Bruening, pp. 18. 3. Ueber den Harzbalsam von Larix decidua, von A. Tschirch und G. Weigel, pp. 24. 5. Ueber den Harzbalsam von Abies pectinata, von A. Tschirch und G. Weigel, pp. 17.

Dodd, Mead & Co.—New York. Stringtown on the pike. A tale of Northermost Kentucky by John Uri Lloyd. With illustrations. pp. 414. 1900.

Wilhelm Engelmann—Leipzig. Die natürlichen Pflanzenfamilien nebst ihren Gattungen und wichtigeren Arten. Von A. Engler. Lief. 200—201. Schluss von Bd. 1, Abth. 1.—Lief. 202—203. Schluss von Bd. 1, Abth. a.—Lief. Ergänzungsheft 1. Nachträge zu Theil 1 bis 4. 1900.

Verlag von Ernst Guenther—Leipzig. Kommentar zum Arzneibuch für das Deutsche Reich. Pharmacopœa Germanica Ed. IV. Mit Zugrundelegung des amtlichen Textes sowie einer Anleitung zur Massanalyse. Im Anschluss an den Schlickum-'schen Kommentar bearbeitet von C. Jehn und E. Crato. Vierte Lieferung. pp. 96. 1900.

Verlag von A. Hartleben—Wien. Technologisches Lexikon. Handbuch für alle Industrien und Gewerbe. Von Louis Edgar Andes. Lieferungen 2—10. pp. 431. 1900.

John Wiley & Sons—New York. Incompatibilities in Prescriptions, for students in pharmacy and medicine and practicing pharmacists and physicians. By Edsel A. Ruddiman. Second edition, rewritten. First thousand. pp. 305. 1900.

Author—Bern. Die Pharmacie und ihre Hilfswissenschaften um die Jahrhundertwende 1800. Von A. Tschirch. Sonderabdruck aus der Pharm. Post. 1900. pp. 40.

Author—New York. Internal Antisepsis by R. W. Wilcox. Reprinted from the Medical News. pp. 14. 1900.

Author. Camphoric Acid by W. A. Noyes and E. F. Phillips. Reprinted from the American Chemical Journal, Oct. 1900. pp. 7.

Author—Sydney. On a new species of Angophora by R. T. Baker. Reprinted from the Proc. of the Linnean Society of New South Wales, April 1900. pp. 3.

## Reviews.

PLANTÆ UTOWANÆ. Plants collected in Bermuda, Porto Rico, St. Thomas, Culebras, Santo Domingo, Jamaica, Cuba, The Caymans, Cozumel, Yucatan and the Alacran Shoals. Dec. 1898 to Mar. 1899, on the Antillean Cruise of the Yacht Utowana, Mr. Allison V. Armour, Owner and Master. Field Columbian Museum Publication 50. Botanical Series Vol. II, No. 2. By Chas. F. Millspaugh, M. D.

In this publication the author confines himself to a "Reconsideration of the Cyperaceæ" and a "Reconsideration of Cakile," the first being a revision of the Antillean Cyperaceæ so far as collected by the Utowana, the second a revision of the species of Cakile found in North and Subtropical America. In the former six genera and nineteen species are recognized, the species being based almost entirely on the characters of the fruit; while in the latter ten species and two hybrids are described of which the two hybrids and three species are new. Each species is illustrated from drawings made from nature, showing diagnostic characters. *L. S. C.*

PLANTÆ INSULÆ ANANASENSIS. A Catalogue of plants collected on the Isle of Pines, Cuba, by Don José Blain. By Chas. Frederick Millspaugh, M.D. Publication 48 of Field Columbian Museum. Botanical Series Vol. I, No. 6.

The above title is that under which a list of a hundred and eighty-five species of flowering plants collected in the northern portion of the Isle of Pines is published. The plants were sent by the collector to Sr. Sauvalle and by the latter they were given to Mr. Charles Wright. They have recently come into the possession of the Field Columbian Museum. The list derives its chief value from the fact that very little material is to be found in American herbaria from this region. Four new species are described. *L. S. C.*

HANDKOMMENTAR ZUM ARZNEIBUCH FÜR DAS DEUTSCHE REICH, mit vergleichender Berücksichtigung der früheren deutschen und anderen Pharmacopœen, bearbeitet von Dr. Alfred Schneider und Dr. Paul Süss. 1. Lieferung. Verlag von Vandenhoeck & Ruprecht, Göttingen. 1900. M. 1.60.

This work, based on the fourth edition of the German pharmacopœia, is a continuation of the well-known Hirsch-Schneider com-

mentaries. The intention of the authors as expressed in the introduction is to produce a work that will serve the practical needs of the apothecary and physician. It is purposed not only to give explanations of the text of the pharmacopœia and introduction in the manipulations and tests therein directed, but also indicate clearly all innovations and changes from the last edition of the "Arzneibuch" as to composition, properties, tests, and uses of remedies.

The subject matter of the fascicle before us is of a general nature, dealing largely with the physical and chemical tests of the pharmacopœia. It begins with a list of the most important changes introduced in the new pharmacopœia, some general remarks as to temperature, fineness of powders, etc., and then goes over to the physical tests. Here are discussed and indicated by numerous illustrations the methods of determining specific gravities, melting and boiling points and solubilities, concluding with a chapter on the use of the microscope in pharmaceutical testing. The chapter on chemical tests is largely devoted to volumetric analysis, though gravimetric methods, examination of fats and oils, ash determinations and delicacy of tests are also touched. In the chapter devoted to manipulations are treated the processes of filtration, extraction of drugs with volatile solvents, sterilization and recovering of chemicals. A chapter on reagents and volumetric solutions with numerous valuable suggestions for their preparation and preservation concludes this part.

The paper and print are of good quality. *R. Fischer.*

KOMMENTAR ZUM ARZNEIBUCH FÜR DAS DEUTSCHE REICH mit Zugrundelegung des amtlichen Textes sowie einer Anleitung zur Massanalyse. Bearbeitet von Dr. C. Jehn und Dr. E. Crato, in 5—6 Lieferungen zum Preise von M. 2.00. Lieferungen 1—4. Verlag von Ernst Günther, Leipzig. 1900.

Among the various commentaries on the German pharmacopœia those of Schlickum, in connection with which the above work is published, have always held a high rank. Whenever a new pharmacopœia goes into effect, it is of great benefit to the pharmacist as well as to the physician to have on hand a book of reference in which are presented in a concise manner the changes made from the last edition, together with a short explanation of all innovations. The sooner such a work is published the greater must be its value, and it speaks well for the authors as well as for the publishers that already

four of the six "Lieferungen" of this commentary have been issued.

On account of the important place which volumetric methods have taken in the tests prescribed by the new German pharmacopœia, the chapter on volumetric analysis has been much enlarged. There have also been added discussions of the methods of alkaloidal assay, of the examination of fats, oils and balsams, as well as on the microscopical examination of drugs.

The discussion of the pharmaceutical text, which has reached the chapter on Herba Hyoscyami in the fourth fascicle, is characterized by clearness and conciseness throughout, omitting much superfluous matter often found in commentaries, which only increase the size and cost of a book without enhancing its value for the purposes intended.

The quality of paper and print is on a par with the contents.

*R. Fischer.*

MEYER'S CONVERSATIONS LEXICON. Ein Nachschlagewerk des allgemeinen Wissens. Fünfte gänzlich neu bearbeitete Auflage. 20. Band, 1028 S. Bibliographisches Institut. 1900.

Der Zweck der jährlichen Supplement-Bände, von denen der vorliegende dem Jahre 1890 bis 1900 gilt, ist auf S. 588 des 17. Bandes dieser Zeitschrift erwähnt worden. Derselbe betrifft einen an hervorragenden Ereignissen und Forschungsergebnissen reichhaltigen Zeitabschnitt und enthält daher auf allen Wissens- und Könnensgebieten interessante Artikel, sowie Biographien und Necrologe, wodurch das Gesammtwerk in jeder Richtung auf der Höhe der Zeit erhalten bleibt. Dies gilt auch für das naturkundige Wissensgebiet. Dahin gehörende reichhaltige Artikel sind unter anderen: Chemie, Electricität und electrotechnische Industrie, Elemente, Ernährung der Pflanzen, Glaskunst-Industrie, Kristallisation und Kristalloptik, Laubfärbung, Licht,, Luft und Luftdruck, Microscop und microscopische Präparate, Röentgenstrahlen, Todtenbestattung, Zelle. Andere besonders interessante und lehrreiche grössere Artikel sind: Bibliotheken und Bibliotheksgebäude, Denkmäler, bei denen unter anderen das von Carl Scheele in Stockholm im J. 1892 nicht erwähnt ist, Gartenbau, Steuern und Verbrauch von Getränken, historische Literatur, Naturschönheit etc.

Die Mehrzahl der grösseren Artikel ist durch vortreffliche Illustrationen, Farbendruckbildern, Karten und Pläne ergänzt worden. Die Austattung ist die mit dem Gesammtwerke gleiche, solide und schöne.

*Fr. H.*

PHARMACEUTISCHER KALENDER 1901. Mit Notizkalender und Hilfsmitteln für die pharmaceutische Praxis. Herausgegeben von B. Fischer und G. Arends. Zwei Theile. Berlin, Verlag von Julius Springer. 1901. $1.

Der 30. Jahrgang dieses allbekannten und geschätzten Jahrbuches gewinnt für ausländische Leser dadurch ein besonderes Interesse, dass es in einem Auszuge aus der Neuausgabe des deutschen Arzneibuches die Angabe der Bereitungsweise der in demselben aufgeführten chemischen und pharmaceutischen Präparate enthält. Aus dem reichhaltigen Inhalte haben ausserdem recht praktischen Werth und Nutzen, die Verzeichnisse der Maximalgaben starkwirkender Mittel, der Löslichkeit der gewöhnlicheren chemischen Präparate, ein Verzeichniss der mittleren Gaben von Arzneimitteln für Hausthiere, eine Anleitung zur Untersuchung der Nahrungsmittel, der Verbandstoffe und für bakteriologische Untersuchungen. Die grosse Reihe praktisch nutzbarer Tabellen verleiht mit dem Gesammtinhalte dem Kalender einen Werth, durch welchen derselbe im In- und im Auslande längst ein geschätztes Vade mecum des Apothekers und Drogisten geworden ist.

*Fr. H.*

VETERINARY COUNTER PRACTISE, a treatise on the diseases of animals and the most suitable remedies for them. By qualified and experienced members of the Royal College of Veterinary Surgeons. 3rd edition, pp. 344. "Chemist & Druggist", Publishers, London, 1900. Price 3 s. 6 p.

Matters relative to veterinary science are frequently referred to the pharmacist, who because of inadequate knowledge or lack of sources of such information, not infrequently is unable to return satisfactory answers and accompany them with suitable remedies.

This small volume which has been compiled for the direct benefit of the pharmacist will in a measure overcome this deficiency. It treats of the diseases, common and peculiar to the several kinds of domestic animals, giving under each ailment the causes, symptoms and medical treatment. The latter are entirely along humane lines

and the remedies selected for special troubles and are not of the old shot gun variety. Diet recommendations are not infrequent especially in stomach and intestinal disorders. Two chapters on general veterinary remedies are also given, also a posological table, containing the B. P. '98 preparations. The last 15 pp. are concerned with the English "Veterinary Surgeons Act," "The Contagious Diseases (of animals) Act," etc., which have no direct interest to the American pharmacist.

The authors have not been overcareful in being consistent in the use of terms. In formulae Latin, abbreviated Latin, English and abbreviated English terms are employed with probably the second predominating. These abbreviated Latin names are also introduced into the reading matter, and again omitted. Slang English stable terms as "tommy" (feed), "nose" (perfume or odor) etc. are introduced.

Aside from these deficiencies the book should prove a handy source of information to pharmacists wherever it is possible to interest stock owners and raisers. *W. O. R.*

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